THE WILD BEASTS OF THE WORLD

BY FRANK FINN F·Z·S·

100 PLATES IN COLOUR

BY LOUIS SARGENT·CUTHBERT

E·SWAN·&·WINIFRED AUSTIN

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CHIMPANZEE
By C. E. Swan

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THE WILD BEASTS OF THE WORLD

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BY

FRANK FINN, F.Z.S.

AUTHOR OF "BIRDS OF THE COUNTRYSIDE," "PETS, AND HOW TO KEEP THEM," ETC.

ILLUSTRATED WITH 100 REPRODUCTIONS IN FULL COLOURS FROM DRAWINGS BY LOUIS SARGENT, CUTHBERT E. SWAN, AND WINIFRED AUSTIN

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WILD BEASTS OF THE WORLD

THE CHIMPANZEE

(*Anthropopithecus troglodytes*)

TAKING it all round, from youth to old age, in appearance and behaviour, the Chimpanzee is the most nearly human of all beasts, and, as it is the hardiest of all man-like apes, and therefore the most familiar in captivity, it is the best known of all of them by sight, though hardly rivalling its formidable relative, the Gorilla, in reputation in the popular mind.

It will be noticed in the illustration that the arms of the creature, as in all apes, are very long, reaching, indeed, below the knee when it stands erect; but they are shorter, and therefore more human, than in any other ape; while the legs, though shorter proportionately than in Man and the Gorilla, are longer than in the Orang. The big ears of the Chimpanzee contrast with the small, refined-looking ones of the latter apes; but as the size of the ears varies much in Man, this is not a very important point. The sex difference in the face of the Chimpanzee is not notable, nor is there much difference in size between the sexes, although the male is the larger, attaining a height of more than four feet. He also has more powerful teeth.

There is, however, much diversity in Chimpanzees, both individual and racial; each seems to have a different face, though all preserve the same general "caricature Irishman" type, and the complexion may vary from dirty flesh-colour to black, many having mottled faces. The coat, though always long and generally black, also shows much diversity, some individuals being nearly as shaggy as bears, while others are scantily clad, especially on the head. The celebrated "Sally," formerly at the London Zoological Gardens, belonged to a black-faced,

bald-headed variety, which has generally been ranked as a distinct species, the Bald Chimpanzee (*Anthropopithecus calvus*).

Local racial distinctions do undoubtedly exist, but, in view of the great amount of variation, it seems best to regard all Chimpanzees as forming members of one species; none of them, at all events, could be mistaken for any other ape.

The home of this animal is the forest region of Tropical Central Africa from Uganda westwards; most of the specimens seen in Europe, however, have come from Loango and the Gaboon. Here the Chimpanzees live in small bands of from five to ten, and spend much of their time on the ground, though often ascending trees to gather wild fruit, on which, with other vegetable produce, they subsist. As some specimens show a liking for animal food—Sally, for instance, would even kill and eat pigeons and rats—they no doubt, like most of the monkey tribe, are not by any means strict vegetarians.

The gait of these apes, although fairly rapid, is awkward-looking; they go on all fours, doubling under the first two joints of the fingers of the hand, so that in front they rest upon their knuckles. They can stand and walk erect, but do not do so much as a rule, although a little female, Daisy, formerly in the Zoo, was much in the habit of acting the biped, clasping a duster over her stomach with her hands meanwhile.

Being powerful animals—even the female being a match for a strong man—they probably have hardly any enemies to flee from, with the exception of the Leopard; and even he might think twice before attacking an adult, let alone a party of them.

The young Chimpanzee at birth clings closely to its mother, and is thus carried about, after the fashion of monkeys generally. At night its mother takes it to bed in a tree, where a nest or platform of twigs, &c., has been built; for the construction of this a low elevation is preferred, no doubt for the sake of shelter from the wind.

Occasionally they are said to associate in large bands, and to indulge in a sort of concert, accompanying their howls and yells by drumming with sticks on hollow logs: this is very probably correct, as many animals take a pleasure in making noises by any means in their power.

The Chimpanzees exhibited in zoological collections have almost always been brought over as quite young animals; they are undeniably delicate, but far less so than the other great apes, and I have recently heard of a case in which one has been successfully kept all through the winter in an outdoor house without artificial heat.

What they undoubtedly require, when small at all events, is plenty of petting and attention; and they prove decidedly more "reasonable," if the expression may be used, than Orangs or Gorillas, not even objecting to correction when they have deserved it—which is pretty often the case, as they are, as one might expect, full of mischief and often very spiteful. When angry they strike with their hands and bite severely. They have a great variety of notes and calls, one very usually heard being a sort of repeated hoot uttered with protruding lips, and accompanied by frenzied dancing or jumping. In the wild state the uproar they create is most annoying at times.

Of course individuals vary a great deal in disposition and intelligence; Sally was a good example of a clever specimen, while Mickey, an apparently dwarfed male, who is the senior Chimpanzee at the Zoo at the time of writing, having been there for ten years, is a kind, affectionate creature, good to smaller Chimpanzees, and tractable with his keeper, besides having a fair share of brains.

The most remarkable Chimpanzee I have seen, however, is one which was recently for some months in the possession of the well-known animal dealer, Mr. J. D. Hamlyn, who has made a specialty of anthropoid apes. This animal, Peter by name, was kept tied up in a living-room, but was often let out, and regularly had his meals with the family; and I have often had the pleasure of sitting at table with him. His behaviour was exactly that of a rather naughty child; his owners assured me that he understood all that was said to him, and certainly his behaviour went far to bear out this statement. I have seen him, on being told to do so, fetch whisky and soda and pour out a "peg," bring his master's slippers and put them on, set up a chair he had pulled over, and so forth, besides coming at call and kissing.

He had, moreover, ideas of his own; when given a note-book and a pencil, he would scribble on one page after another just as a child does, and he would steal any key he could get hold of and try to unlock the padlock of his chain with it. Another original idea of his was to get hold of a whip or a strap, and therewith thrash another Chimpanzee, Pat, of his own size, who, being spiteful, was always tied up. Peter tyrannised over Pat very much, tried to shut him in his box, and always kept him under whenever possible; yet on occasion he would side with him.

Peter had previously been in a private owner's house for some months before he came into Mr. Hamlyn's possession; but a previous specimen Mr. Hamlyn had, Pansy, was trained on his premises throughout, and was as civilised in his behaviour as Peter, though not so widely accomplished. He met his death by taking a fatal chill, owing to a practice he had of taking a sponge and washing the stairs —a proceeding in which, needless to say, he received no encouragement.

From instances like these, and other similar ones which have been recorded, it would seem that Chimpanzees when young could be well dealt with in much the same way as children, though their capricious disposition, and strength and ferocity when roused, always make restraint desirable, and it would be absolutely necessary when the animals became fully adult.

MALE GORILLA
By C. E. Swan

THE GORILLA

(*Anthropopithecus gorilla*)

WERE it not for our own existence on the earth, the Gorilla could claim to be the head of the animal kingdom, for he is by very far the most powerful of all apes, and we do not know that his intelligence is at all inferior to that of the Chimpanzee.

In general form he has much resemblance to that animal, but is more heavily built, with longer arms and legs; the fingers and toes are, on the other hand, much shorter and thicker than the Chimpanzee's, the latter webbed at the base, while the whole hand and foot are broader. The eyebrow-ridges are very prominent in the Gorilla, especially in the male, whose skull also bears great central and lateral crests for the attachment of muscles.

The Gorilla has the face and skin all over the body black; the coat, which is shorter, closer, and of a more woolly nature than the Chimpanzee's, is also black, but with a strong tendency to grey on the back, especially in advancing age, when it also is inclined to disappear on the chest and about the hips altogether. The crown of the head is commonly, but not always, covered with chestnut-red hair.

The female Gorilla attains about the same size as the male Chimpanzee, although stouter and more powerful, and chiefly differs in her prominent eyebrows and the other points above described; but the adult male, as the illustration shows, has a very different and much more animal cast of face, the jaws becoming greatly developed; in size also this sex far surpasses any other ape, male Gorillas of six feet in height being on record, while in breadth they much surpass a man of the same stature. The teeth, especially the canines, are very powerful. The young Gorilla, however, is more human-looking than the Chimpanzee, distinctly recalling a badly-developed negro child in appearance, the resemblance being increased by the fact that the Gorilla more readily stands up and

walks on its hind legs, though its normal gait, like that of the other, is on all fours, with the ends of the fingers similarly bent under. The habit of beating the breast, so characteristic of the Gorilla, is already found in young animals, as is so commonly the case with animal peculiarities of behaviour—thus, the young peacock spreads his little tail when he is only of the size of a partridge.

As in the case of the Chimpanzee, there is much local variation in Gorillas, and several races and sub-species have been named and described, though it is very doubtful if any of these possess full specific value.

The Gorilla inhabits part of the same region as the Chimpanzee, the great forest region of West Equatorial Africa; but its range is not nearly so extensive, being confined to the district between the Cameroons and the Congo, and it is very rarely found near the coast.

It is a thoroughly forest-haunting animal, but, although a good climber, lives a good deal on the ground, and often makes its bed there, by breaking down and piling up stalks of plants into a mass about a foot thick. Its food is mainly vegetable, but it is said to be more carnivorous in its tastes than the Chimpanzee. Like that animal, it will raid the cultivated patches of the natives. Gorillas also live in smaller troops than Chimpanzees—a male, female, and one or two young animals being all that are usually found together. The head of the family is said to sleep at the foot of a tree, while the weaker members of it sleep in a nest made in the branches; for this species also builds nests in trees.

The old male Gorilla is, of course, a match for practically any animal, on account of his gigantic strength and huge teeth; but he appears to avoid an encounter with man, although a terrible adversary when wounded. Old accounts, indeed, say otherwise, and it is quite possible that solitary males, such as are found among most animals, may become fierce and dangerous; for it is a well-known fact that the monkey tribe in general become morose and spiteful with advancing years, as indeed do a great number of animals, especially of the male sex, from grouse to men!

The Gorilla does not usually frequent the same parts of the forest as its smaller relative, and it is much rarer; indeed, it has hardly ever been seen wild by Europeans. It also appears not to be very noisy, although the male roars as well as beats his breast when enraged. Alliances between the two great apes are said to occur at times, and it has been suggested that one or two doubtful specimens, notably one "Mafuka," a female exhibited in the Dresden Zoological Gardens in 1875, were hybrids between the Gorilla and Chimpanzee; and, considering that the lower monkeys frequently produce hybrids in captivity, it would seem that this is quite possible.

The Gorilla is not only the most striking in appearance of all apes, but it has been known longer than any other; that is, if the "Gorillas" described by Hanno the Carthaginian, in his voyage of discovery made in 470 B.C., really were animals of this species. What he says is, that in a bay called "The Horn of the South," on the West African Coast, he found an island containing a lake, in which was yet another island full of "hairy men and women," which his interpreters called Gorillas. These creatures were very active, and defended themselves by throwing stones; three females were, however, captured, and, as they "refused to go quietly," were killed, and their skins brought to Carthage, where they were to be seen for centuries afterwards, for Pliny records that Roman invaders saw two of them at Carthage in the temple of Astarte, in 146 B.C. Doubt has been thrown on this account, and it has been suggested that the animals in question were Baboons, who are well known to defend themselves by stone-throwing.

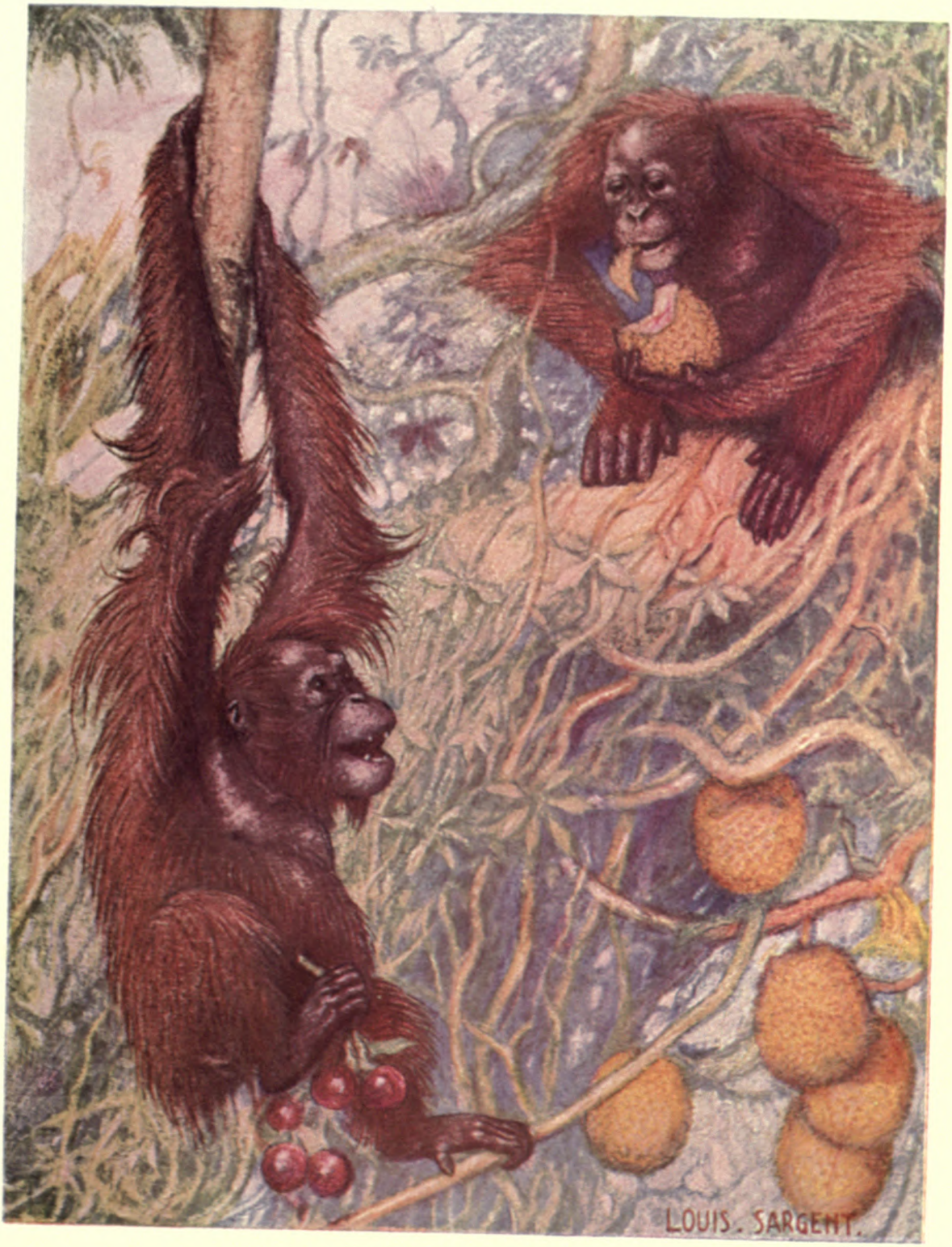
But, as a matter of fact, any of the more intelligent monkeys will use missiles. Chimpanzees certainly do so in captivity; and the ancients, who knew the tailless monkey of North Africa, the so-called "Barbary Ape," quite well, were not likely to mistake the far less human-looking Baboons for hairy people; while this is just the sort of mistake which is actually made by young children and primitive people about anthropoid apes to-day. At the same time, it must be admitted that Chimpanzees may be meant.

The next recorder of the Gorilla was an English sailor, Andrew

Battel, whose adventures in West Africa were given in "Purchas his Pilgrims," published in 1625; here are described two "monsters" found in the West African forests, as the "Pongo" and "Enjocko." His "Pongo" was evidently the Gorilla, the other ape being the Chimpanzee, still called "'Ntschego" by the natives, while the Gorilla is known as M'pungu.

The Gorilla is still a very little-known animal, however, and its delicacy has so far prevented us from gaining much knowledge of its habits even in captivity, for it is difficult to keep alive even in its own country, and the few individuals, all young, which have been exhibited in Europe have seldom lived even for a year. Several have been exhibited in our own Zoological Gardens, but the first one brought to England was one for some time exhibited in a travelling menagerie as a Chimpanzee! The Gorilla which so far has done best in captivity is one which lived in the Berlin Aquarium, and had been carefully looked after in West Africa for some time before he reached that institution. He was allowed a good deal of liberty, had his meals at table and behaved well, and showed much affection for his human friends, though rather mischievous. In fact, his manners appear to have been much the same as those of the Chimpanzees treated in the same way, which I have been able, as previously remarked, to observe.

The Gorilla is, however, undoubtedly not only more delicate than the Chimpanzee, but is generally, at any rate, quite different in temperament, being fiercer, and at the same time more nervous and sensitive, so that it is always likely to require greater care in its management. I was particularly struck by the human way in which a female imported by Mr. Hamlyn—the largest which has reached England alive so far—covered her face with handfuls of hay held up to it when looked at in her travelling cage, and then struck the bars furiously if the inspection were persevered in. Such an animal as this needs very considerate handling, but the obstacles to its successful treatment ought not to be insuperable.



ORANG-UTANS
By Louis A. Sargent

THE ORANG-UTAN

(*Simia satyrus*)

THIS, the third and last of the great man-like apes, is found far away from the African home of the Gorilla and Chimpanzee—in Borneo and Sumatra; where, by the way, there occur other animals with near African relatives. It differs from the other two not only in the red colour of its hair, but equally remarkably in its shape, which departs much further from the human form; the arms in the Orang being so long as to reach the ground when the creature stands erect, and the legs being very short, while the body is also very short and round. The fingers and toes are very long, with the exception of the thumb and great toe, which are very small indeed, and often minus the last joint. The colour of the coat, the hair of which is particularly long and lank, varies from almost chocolate to a bright auburn, and, as in the Chimpanzee, there is a great amount of variation in its abundance and in the colour of the skin, many Orangs being but scantily furnished with hair, and dark in the face and skin, while in the ordinary type the face is mostly dirty flesh-colour, and the hair abundant.

There is as great a difference in the sexes as in the case of the Gorilla, the male, which is much the larger, having particularly big canine teeth, and, in many instances, developing a fatty expansion of the cheeks which makes the face peculiarly broad. Such individuals, however, occur side by side with those of the ordinary type. The goitred appearance of the neck is due to a large vocal sac. The ears of the Orang are small and delicate, and its general expression much more pleasing and refined—if one can apply the term to any of these creatures—than in the other two. In height the male reaches four or five feet, when erect, but this animal very seldom stands upright on the ground, and indeed seldom comes there at all; when it does, it walks, like the others, on the knuckles and feet. It is, however, essenti-

ally a tree animal; and, although very slow in its movements compared to the Chimpanzee, and not given to jumping, gets along at such a pace by swinging itself with its long powerful arms, that it is often all a man can do to follow it on the ground. Like the Chimpanzee, it builds a platform nest of boughs to rest and sleep in, constructing a fresh one every two or three nights.

Its food consists of wild fruits, leaves, and so forth, and it is especially fond of the large spiny fruit of the Durian (*Durio zibethinus*), that East Indian fruit which has long been celebrated for the unequalled delightfulness of its flavour and the singular and penetrating vileness of its smell. In search of this it will at times approach human habitations, but usually lives far away from these, and often in flooded forests, which is the more remarkable, as it is quite unable to swim—at least this was the case with a specimen observed by Mr. W. Hornaday.

In its native haunts it has but few enemies; it is said to be occasionally attacked by the Crocodile or the Python, but to be able to give a good account of itself with either of them, jumping on the back of the former and wrenching its jaws asunder, and disabling the great snake with its powerful bite.

Against man it also makes a vigorous defence, seizing its adversary and biting him severely; cases have been known in which the victim has escaped with the loss of the ends of his fingers, which were bitten off by the infuriated ape. In this manner also they attack each other, and specimens with mutilated fingers are frequently met with.

The Orang, although not a ferocious animal, is less sociable than the Gorilla and Chimpanzee, being usually found alone in the case of the male, though a female is commonly found accompanied by her young—a baby in arms, and an elder one which is more or less independent. The infant Orang clings tightly to its mother's long hair, as usual in creatures of this kind. I have more than once seen quite small specimens which had been imported to Calcutta, and these little things clung gladly to one; it was pitiful to hear them cry when they were taken away.

In the ordinary way the Orang is a rather silent animal, its whole

character being quiet and self-contained compared with that of the Chimpanzee; the adult, however, has a grunting note. It has long been known in captivity, and in my time was often brought to Calcutta, as it had been long previously, being a great object of interest to the natives of Bengal, who call it "Bun manus"—jungle man, almost the same name as the Malay "Orang-utan"—wild man. I have, indeed, been asked by a native woman at the Calcutta Zoo whether an Orang she and her husband were looking at was not a man, just as I have heard a little child hail Mickey, the Chimpanzee at the London Zoo, as "boy." The Dyak name of the animal is "Mias."

Even in the East, the Orang is a delicate animal in confinement, and it is, now at all events, less often to be met with in captivity than the Chimpanzee in Europe. It is a much less energetic and lively creature than that species, and this is, no doubt, one reason why it is not so easy to keep. It is also more sensitive; when disappointed in anything—as when food is offered and not given, or when its keeper leaves it, or it is put back into a cage after being out—it will often roll about on the floor and scream with passion. There is, however, something very attractive about this animal, with its quiet, gentle ways, and humorous intellectual expression; and it is undoubtedly capable of great attachment to its own kind, as was shown many years ago in the case of three specimens, a male, a female, and a young one, which were allowed liberty in India.

After some time the female fell ill and died, and her two companions showed the most touching grief; the young one wished to follow the body as it was carried away, and when prevented showed its vexation in the manner described above. The sorrow of the male, although they had never been very intimate, was deeper: he mounted to the top of their house, and remained for days gazing fixedly in the direction in which he had seen the corpse of his companion taken away. Ultimately he came down dizzy and staggering with sunstroke, and before long he died also.

A good-sized female in the Calcutta Zoo in my time was very friendly with me, and would affectionately put her arm round my neck

through the cage bars, paying no attention to food offered her at the time by other visitors; yet she took a malicious pleasure in grabbing little boys by the leg as they passed, and moped when part of the cage was wired up to prevent this amusement. I have seen her tear off about half of a native woman's linen shawl, and promptly cover her own head with it, to the great edification of its former owner, who laughed till she had to lean against a lady friend for support. This specimen did not live very long, and was found on her death to be grossly fat, but after this an outdoor extension was made to the Orang cage in this house, and when I left Calcutta a young pair had been thriving in it for some time. The male of these was decidedly inclined to be mischievous, and when exhibited in a climate like that of Calcutta, where temperature allows fresh air to be given, the Orang is certainly more cheerful and energetic than it appears over here, though, as above remarked, it cannot be called hardy even in the East.

The instinct of covering its head is very marked, and in the wild state the animal is said to cover itself over with large leaves when sleeping in its nest, should the weather be wet or chilly; it is not an early riser, and goes to bed betimes, in conformity with its generally sluggish nature.

HOOLOCKS
By Louis A. Sargent

THE HOOLOCK

(*Hylobates hoolock*)

THE Hoolock is the best known of the group of small long-armed apes, known as Gibbons, which range through the hilly forest regions of Eastern Asia from Bhutan to Hainan and Java; the present species, which is the most westerly in its range, extending east to Arracan.

The form of this creature is slender and graceful; the bodily shape generally much resembles that of man, except for the great length of the arms, which allow the finger-tips to touch the ground when the animal stands erect; the thumb and great toe are much larger than in the other apes. The Hoolock, however, approaches the lower monkeys in several anatomical characters, and in having, though only to a small extent, the bare callous patches on the seat so commonly found in them, but absent in the great anthropoid apes before dealt with. The canine teeth are long and slender in both sexes.

The coat is also composed of fur like a monkey's, rather than what we more usually distinguish as hair. It varies very remarkably in colour, the normal hue being black with a white band across the brow; females, however, are usually brownish-black, and often not black at all, but pale straw colour, or pale above and brown below. The face, palms, and soles, however, are always black. In size the creature is small, only reaching a little over two feet in height.

The Hoolock resembles man very markedly in one particular, in that it is a true biped, running and walking on the hinder limbs alone, just like a human being; the long arms are often stated to be held up or forward when walking, but as I have seen the animal, it has done just as a man would do if his arms were of such great length—slightly bent them so as to keep the hands clear of the ground. Although the gait is flat-footed and awkward, the creature is nimble enough, and gets along nearly as fast as a human being equally small could do.

In its natural state, however, the Gibbon can seldom come to the ground, as it is a thoroughly arboreal animal, travelling among the trees and bamboos by swinging itself along with its great arms. The beauty of its movements must be seen to be realised; it is the champion gymnast of the animal kingdom, and one never tires of admiring the grace of its swinging leaps and the sureness of its hold, even in the confined limits of a menagerie. "Taking off" from one hand, it will throw itself half-a-dozen yards—merely touch, as it seems, with the other hand, swing off again, and so on for an hour at a time. Its powers are seen at their best when a troop is descending a hill-side clothed with bamboos, and it flings itself from one bending stem to another lower down, thus getting down-hill at a marvellous pace. They also ascend very rapidly, and from the hilly nature of their haunts have to go up and down a great deal, especially as, in many cases, they retire to the low warm valleys to sleep, and come uphill in the morning to feed. They do not build nests like the great apes, simply roosting on the boughs like ordinary monkeys, none of which have any notion of nest-building.

Their food consists not only of leaves, shoots, wild fruit, and so forth, but also to a great extent of insects, spiders, the eggs of small birds, and even the birds themselves. These may be even captured on the wing at times, for a specimen of the allied Silvery Gibbon (*Hylobates leuciscus*) in captivity has been seen to take a flying bird with one hand as she swung from one perch to another, her landing not being in the least disturbed by the feat performed *en route.*

Water is drunk by the Hoolock in rather a peculiar way; it dips its hand in, and licks off the drops, often sliding down a bough to do this. This way of drinking is characteristic of Gibbons generally; but the animal also drinks by putting down its mouth in the ordinary way. An early observer records, by the way, that he has seen the female of some Gibbon take her young one to the water and wash its face, in spite of its fractious objections to the process. The young are habitually carried clinging to the parent, maintaining their hold securely during all its gymnastic performances.

The Hoolock appears to be quite unable to swim; when in deep

water it throws its arms up and struggles helplessly, just like a human being who has no knowledge of swimming. As the Orang is also no swimmer, it is possible that the inability to swim applies to all these man-like apes. It may have something to do with the biped attitude, for many of the lower monkeys swim instinctively like other quadrupeds, using the "dog-stroke" like them.

One of the most notable peculiarities of the Hoolock is its call, which is a fine loud, clear, two-syllabled whoop, like "Whooko, Whooko," frequently repeated. It is generally ready to respond to an imitation of this note in captivity, and one we had in the Calcutta Zoo used to practise duets with a cock Argus pheasant (*Argusianus argus*), whose call is very similar in character. Hoolocks are very fond of the sound of their own voices, and the noise a troop can make has been described as "a storm of sound." They are particularly noisy in the morning and evening, when, as has been humorously remarked, they perform "regular oratorios"; thus their calls are some of the characteristic sounds of jungle life wherever they are found.

They are delicate creatures, having been found suffering from chest complaints even in the wild state, and they are hard to keep in captivity even in India, although a specimen once survived nine years in the Calcutta Zoo. Animals with such active habits need a great deal of space for exercise; and it seems to me also that a more varied diet, and one consisting more of substances they would be likely to obtain in a wild state, would be better for them than what is usually given to monkeys. Delicate animals can generally be kept if due attention is given to this point of dietary, which is usually the main difficulty.

When Hoolocks are allowed to go at large and find much of their own food, they do well; and they are so tameable that this liberty can be permitted them in about a month after they are acquired. We had a male loose in the Calcutta Zoo in my time, and they are often so kept by planters in Assam. When thus living near the native haunts of his species, it has been observed that the tame Hoolock cannot obtain admission to their society, and the like has been noticed with a Javanese Gibbon which was released after being kept confined for a time.

Hoolocks are thoroughly nice animals, quite different from ordinary monkeys, and most people like them in consequence; they become very affectionate, and are little inclined to mischief; they may, however, ultimately become spiteful, especially to human beings of their own sex; and for this reason those allowed liberty in Calcutta had to be shut up in the end.

The proper way to treat them would be to give them a large warm indoor house, with a structure like a big aviary outside, in which they could pass their time in fine weather.

There are several other species of Gibbons, but all have a very close resemblance to the Hoolock in appearance and general habits, with the exception of the Siamang of Sumatra (*Hylobates syndactylus*), which is more distinct. The colour variation seen in the Hoolock is repeated in other species; and an example of the Hainan Gibbon (*Hylobates hainanus*) in the London Zoological Gardens actually changed from sooty to straw colour. This creature had a stiff arm, but one had to look closely to notice this, as it swung itself about so freely with the sound limb that the defect was not at all obvious.

The Siamang is the largest of the Gibbons, reaching three feet in height, and the most stoutly built; it is always black all over, and has an enlargement of the throat, formed by the presence of a vocal sac; its note is loud and powerful, and must be very different from the whoop of the Hoolock, as it is described as a loud barking howl.

The Siamang is rare in captivity, and has been credited with a morose disposition by several observers; but this was not the case with a young specimen possessed by Dr. H. O. Forbes when in Sumatra, whose character was the height of amiability. It even bore him no grudge for pain inflicted on it in lancing boils and extracting teeth while it was teething, and it much appreciated the use of an umbrella as a sunshade, crying for this to be given it if there was any sign of its being forgotten. Such intelligence shows that the creature has a reasonable idea of what is for its welfare, and ranks the Siamang high among the lower animals in mental power.

LUNGOORS
By Louis A. Sargent

THE LUNGOOR

(*Semnopithecus entellus*)

THE Lungoor is one of the most familiar and striking animals of India, being very abundant and widely spread, and enjoying particular immunity from molestation as the incarnation of the monkey-god Hanuman, by whose name, indeed, the species is sometimes known.

It is a large monkey, about equalling a greyhound in size, and somewhat resembling one in form, owing to its light and long-limbed build; the tail is very long, more than equalling the head and body in length. The colour is very constant, being alike in both sexes, while the young are very similar to the adult animals. Males, however, are larger than females, and have more powerful canines, as is usual with monkeys.

The Lungoor is essentially a tree-monkey, being an active and powerful climber, and a remarkable leaper. On the ground it is also an agile animal, its bounding gallop being remarkable for grace, while a touch of grotesqueness is given by the curving of the long tail over the back. The monkey, however, cannot long hold his own against a horse; when the experiment was tried the poor beast was soon run to a standstill, and could only lie and gaze imploringly at his pursuer, who of course spared him.

The creature, however, has not much occasion to come to the ground except when travelling over a treeless space, for its ordinary food consists of the leaves of trees; of these it devours a great variety, and probably eats some poisonous kinds, for it is found to be able to take with impunity doses of strychnine which prove fatal to the common brown monkey or Bunder (*Macacus rhesus*).

Fruit and grain also form part of this animal's food, and it makes no scruple of levying tithes upon its worshippers' property, not only in

the orchards and the corn-fields, but from the shops in the bazaar, for where it is under Hindu protection it comes about human dwellings, perching on the roofs, and making itself generally as great a nuisance as a monkey living in the odour of sanctity might be expected to become.

It is a highly social animal, living in troops of several dozen individuals, including both sexes; the leading male of the troop, however, is credited with exercising despotic authority, and is also said, when becoming enfeebled with age, to be hunted to death if possible by his rivals. This is probable enough; and at any rate old solitary males—no doubt deposed monarchs—may be met with at times.

Although Lungoors are more grave and composed in demeanour than the common monkeys, they will fight most desperately at times, and a quite Homeric combat was once witnessed by Mr. T. Hughes, formerly of the Geological Survey of India. In this case, two troops, a small and a large one, looked on while the leader of the former—an unusually large specimen—heroically engaged two males from the latter. He had mortally wounded one by ripping open his throat, when two females of the opposing party attacked and injured him so terribly that he shortly died, whereupon his followers were cruelly persecuted by the winning side, who even shook down from a tree one of his females carrying her young, so that she died also. It has been noticed as a curious fact, that even in the remotest jungles these creatures appear instinctively to recognise man as an ally against the Tiger, whom they follow about in the trees overhead, abusing him lustily. The Leopard, however, is a far worse enemy to them, and they also fall victims to Pythons, which will attack even large male specimens.

Lungoors possess a considerable variety of notes, the harsh guttural alarm-note being strongly contrasted with the loud musical whoop or call given as they bound from tree to tree. This note is seldom heard in captivity, and the species does not do very well in that condition even in India, though it has not unfrequently reproduced when caged. It needs a good supply of its natural diet of leaves, its stomach being

especially adapted for the digestion of such food, being large and divided into compartments.

The active habits of this monkey also render a larger cage than is needed for other species of the same size a matter of necessity. A good many, however, are captured and exported, so that this is the most familiar of its group in captivity in Europe, and has often been exhibited in the London Zoological Gardens.

The range of the Lungoor is wide, from the Deccan to the southern bank of the Ganges; it is a denizen of the hot plains, being represented in the northern hills by a nearly allied species or local race, the Himalayan Lungoor (*Semnopithecus schistaceus*), a larger animal, with a longer coat and smaller ears. This animal, although in the ordinary way moving up and down the mountains according to the temperature, may sometimes be seen sporting in the trees among the snow, as high up as 11,000 feet, in the neighbourhood of Simla.

Common as is the ordinary Lungoor, its range has not yet been completely mapped out to the north-west, west and south, but a different species, the Madras Lungoor (*Semnopithecus priamus*) occupies the Coromandel Coast and the north of Ceylon, and another, the Malabar Lungoor (*Semnopithecus hypoleucus*) lives on the Malabar side. In the Nilgiri Hills is found a very handsome species (*Semnopithecus johni*), with long glossy-black hair and a light-brown head, while in south and west Ceylon there is a species peculiar to the island, the true Wanderoo (*Semnopithecus cephalopterus*), a brown animal with a ruff of white whiskers; this is remarkable for producing a completely white variety, in which, however, the face and eyes remain dark. Altogether there are about thirty species of these leaf-eating monkeys or Lungoors, extending east to Java in one direction and Tibet in the other. They resemble the subject of this article in general form and habits, but often have markedly different colours. None are common in captivity.

Two species, however, are so remarkable as to deserve special mention. The Proboscis Monkey (*Nasalis larvatus*) of Borneo, a chestnut and buff animal of large size, in which the old male has a huge long, flattened, drooping nose—an absurd caricature of our

prominent feature. The local natives know it by the—to Europeans—uncomplimentary title of "White Man." In the female the nose is less well developed, and in the young it is short and turned up. This is a very delicate animal, but has been kept in captivity both in Calcutta and London. It has been observed in its wild state to keep among boughs overhanging the water.

The other kind, the Snub-nosed Monkey (*Rhinopithecus roxellanæ*) of Moupin in North-eastern China, which extends to Kokonoor, is equally extraordinary in its way. It is also a large animal, and powerfully built, with an absurd-looking small turned-up nose, set in a green face. Its fur is thick and very gaily coloured, chiefly grey above and yellow below, becoming bright orange on the fur around the bare face and on the neck and chest. This monkey is a true cold-climate species, living permanently in mountain forests where snow lies more than half the year—a very strange contrast to the tropical haunts of most of this group. Such a hardy and quaint-looking animal would be a great acquisition to any European Zoological Garden; but, so far as I am aware, no such institution has ever exhibited it.

BRUSH-TAILED GUEREZA

By Louis A. Sargent

THE GUEREZA

(*Colobus guereza*)

THE Lungoors are an exclusively Asiatic group of monkeys, but they have allies in Africa in the shape of the *Colobus* Monkeys, of which the Abyssinian species, or typical Guereza, may be considered a characteristic sample.

It is a slender, long-limbed, long-tailed monkey, though not so long and slim as a Lungoor; and while it agrees with that group in only having small seat-pads, it differs in possessing cheek-pouches, though these are but small. A marked point of difference is the absence of a thumb in the hand, though the great toe of the foot is sufficiently well developed.

These monkeys are, like the Lungoors, essentially tree-animals and leaf-feeders; they seldom come to the ground, and have the large, partitioned stomach characteristic of a leaf-eating monkey. They also eat insects, and, of course, they partake of fruit as well, but they appear not to rob gardens; at any rate Sir H. H. Johnston speaks of the Guereza as avoiding human cultivations. They go in small companies, and do not appear to be noisy animals.

Both sexes of the animal have the beautiful black-and-white coat, with snowy side-flounces and brush-tip to the tail; the size about equals that of a terrier. In Abyssinia and East Africa this monkey has only the tip of the tail white; but on the slopes of Kilimanjaro it is replaced by a very beautiful long-haired race (*Colobus guereza caudatus*), in which the side-fringes hang down as far as the middle of the legs, and the tail is clothed from the tip to nearly the root with long drooping hairs, forming a beautiful brush like that of a collie. This handsome creature, perhaps the most beautiful of all monkeys, is also found on Mount Kenia, where it ranges to a great height. One would expect such a strikingly

coloured animal to be very conspicuous in the forest trees; but this is said not to be the case, as the long white hair is deceptively like the tresses of grey lichen which clothe the boughs. This, however, does not apply to the lowland form with shorter hair, which I have seen myself in trees at Wasin on the East African Coast, and noticed it was as conspicuous as a black-and-white cat would have been in a similar situation.

The fact is, that after studying the colouration of monkeys in general, and the African ones in particular, one is inclined to suppose that it does not much matter what colour these active tree-haunting creatures wear, and it is probable that the long coat of the mountain Guereza is destined as a protection from the cold rather than for concealment from possible enemies.

The Guereza is described as a gentle, harmless creature, and this character was well borne out by specimens recently exhibited in the London Zoological Gardens, though it must be admitted that both of these were young.

One was confined along with a specimen of the Angolan Guereza (*Colobus angolensis*), which is not unlike the typical Guereza in general colour, but has very long drooping white whiskers, and the white hair of the body forming a mantle on the shoulders. These inhabited one of the side cages in the monkey-house, and on one occasion I saw one of them, after playing for some time with the tail of his companion as it hung down through the barred floor of their sleeping box, actually go up to the bedroom, and, holding up the brush of his tail to the other, offer it to him, as if to say, "One good turn deserves another."

Another specimen of the common Guereza arrived along with a White-tailed Mongoose (*Herpestes albicauda*), with which it had been living previously; the two incongruous associates were the most devoted of friends, and always close together. The Mongoose, like the monkey, was a young animal, but was the bigger of the two—the White-tailed species being one of the largest of the Mongooses—and could easily have disposed of his companion had he wished. He treated him, how-

ever, with the greatest consideration, and would even allow him to take away food. The monkey, for his part, would often sit beside the Mongoose with his arm round it, in which position they reminded one most comically of those pictures of a little child and a big dog which are so popular.

Unfortunately, although the Mongoose, now full-grown, survives at the time of writing, the monkey is now dead. The Guerezas, like the Lungoors, are delicate animals in captivity, and, as in their case, special arrangements will have to be made if they are ever to be kept successfully. The beautiful brush-tailed Alpine variety, although not so far imported alive, would probably be the best for European menageries, as it ought to be suitable for out-door treatment.

All the Guerezas are rare in captivity, and the Abyssinian and Angolan species, mentioned above, have only been exhibited in the Zoological Gardens quite lately. There are about a dozen species altogether in this group, and of these half are either black-and-white or all black. The beautiful silky fur of these creatures is in great request for ornament, not only among African savages, who delight in making war head-dresses of it, but also among civilised people, who ought to know better, for these monkeys are not in any way noxious or objectionable animals, and deserve protection rather than persecution at the hands of humanity.

The largest kind, and one of the best known, is the black Guereza (*Colobus satanas*) of the West Coast of Africa, which measures more than a yard long in the body, and has a tail also of great length. As its name implies, it is black all over, both in fur and face.

Kirk's Guereza (*Colobus kirki*), of the island of Zanzibar, which exhibits brown as well as black-and-white in its colouration, has a peculiar and melancholy interest as the only monkey which has become extinct by human agency. It was confined to the island, and Sir John Kirk, its discoverer, finding that in 1884 it had nearly disappeared owing to the destruction of the forest, sent his native hunters to a wood where it was believed to linger, to report upon it. The wretched negroes discovered a dozen specimens, and killed them all!

Of course, the proper thing to have done would have been to have transported two or three pairs to some suitable island unoccupied by other monkeys, where the species might have had a new lease of life if properly protected, while any undue increase could be restricted by the occasional sacrifice of a few specimens for museum purposes, or their capture for Zoological Gardens.

BUNDERS
By Louis A. Sargent

THE BUNDER

(*Macacus rhesus*)

THE common Brown Monkey of India is one of the most abundant of its tribe, ranging in the wild state from Chitral to China, and being an abundant species all over Northern India, though below Bombay and the Godavery River it is replaced by the allied Bonnet Monkey (*Macacus sinicus*), a long-tailed species with the hair of the crown radiating, not regularly inclined backwards.

The common Rhesus varies a good deal in length of tail, which is, however, never much more than half as long as the rest of the animal; there is also some variation in form, certain individuals being stouter built than others, while the brown fur may be more or less richly tinted; in any case it is generally inclined to tawny in the hind-quarters. Some individuals are very red about the face and hinder-parts, which have a considerable naked area around the callosities on which the animal sits. The cheek-pouches are also large, these points being characteristic of the Macaque group as a whole.

In size the Bunder, when adult, about equals a big terrier, the males being stouter and more powerful than their mates, and with a bolder and more virile type of feature. Young ones are coloured much like their parents, but have the most comical little wizened faces; they cling to the fur of the parent's chest for about a fortnight, but then begin to venture abroad under her supervision, which is certainly needed, as in India at all events it would be difficult to find a spot on which some bird of prey or other had not fixed its eye, to say nothing of enemies without wings, in the shape of Leopards, wild Cats, Snakes, and so forth. Possibly Crocodiles account for some of them, as these monkeys are rather fond of water, and some young individuals allowed to go free in the Calcutta Zoo have been observed

to jump into it off boughs purely for the fun of the thing, just like a party of schoolboys bathing.

Although very active, these monkeys cannot compare with the Lungoor in gymnastic feats, and they are more inclined to come to the ground, as they are most omnivorous feeders, eating not only leaves, fruit, and grain, but also insects, lizards, and so forth. Like their sacred relative, they come about cultivation and houses, and commit various depredations; for the respect in which the Lungoor is held appears to be extended to his lay relatives to some extent, and in any case the Indian native is very tolerant of animals even when noxious—a characteristic which, although it occasionally allows of a good deal of annoyance from the creatures, makes India perhaps the best country in the world for the naturalist, wild animals being so astonishingly confiding there.

The Bunder is not only widely distributed in the plains, but ascends the hills in places, as in Kashmir and about Simla, where a colony inhabits Jacko Hill. Its existence in Chitral, in a decidedly cold climate, has only been recently ascertained by Captain Macmahon, and a specimen received from him is, at the time of writing, in our Zoological Gardens; it has a thick silky coat, somewhat like that of the Tcheli Monkey (*Macacus tcheliensis*) of North China, which is itself doubtfully distinct from the present species.

These monkeys are sociable animals, like most of their kind, but they are continually quarrelling amongst themselves, teasing each other and striking; when enraged their faces become quite red, as Darwin pointed out long ago. Although they have no call, unlike Lungoors or Hoolocks, their vocabulary is fairly extensive, but the expressions are not musical by any means. Even the mother will snatch food from her young one when it is weaned and begins to feed itself, and, of course, there is always unpleasantness between the leading male and his would-be rivals.

Bunders are captured in large numbers for export, and in England, at all events, this is far the commonest monkey kept in captivity nowadays; it is the usual companion of the organ-grinder. Most of those seen for sale are quite young, and I was told in India that they were

caught by the simple device of placing food under a basket propped up by a stick with a string attached—much like the familiar sieve-trap for sparrows.

The species, being a hardy and omnivorous one, bears captivity well, and will winter out-of-doors in England; it has also bred here as well as in captivity in its own country. Old females often get very obese, and they seem long-lived; I have known cases of specimens over fifteen years old in India, and they seemed still healthy. One of these was a very fine male of the yellow variety; for now and then individuals of this species are found of a golden-buff tint, with very fair skin on the face and paws—monkey blondes in fact. It would be interesting to isolate pairs of these, and see if the colour proved to be hereditary.

The group of Macaque Monkeys, of which this animal is a good typical example, is purely Asiatic, except for the tailless Barbary Ape (*Macacus inuus*), which is found in North Africa; to this species the well-known monkeys on Gibraltar belong. It was by dissecting this monkey that the ancient Greek doctors acquired the knowledge of anatomy which they applied to the human subject.

There are nearly a score of these Macaque Monkeys, as far as is known very similar in voice and habits, and not showing much difference in size, though they vary most remarkably in the matter of tail. They all seem also to bear captivity well, and hence the common ones are very familiar, not only the Bunder, but the above-mentioned Bonnet Monkey and the Crab-eating Macaque (*Macacus cynomolgus*) being freely imported.

This last is a short-limbed and long-tailed species, typically much darker in colour than the Bunder, with the ears and paws black. Its swollen muzzle gives it a decidedly brutal appearance, and it is a coarse, hardy animal, with a decided appetite for animal food. Ranging from Burma through the East Indies even to Timor, it frequents estuarine forests and mangrove swamps, coming down into the tidal mud to catch shrimps and crabs. The ways of the old females with their young are said to be very amusing, the vagrant propensities of the youthful

monkey being restrained by a jerk of the tail and a cuff on the head, followed by maternal cuddling to appease his fractious shrieks.

In the case of a little Japanese monkey recently reared at the Zoo, one could often see him hauled away from the public or the interested occupants of the next cage in this way, but his mother never seemed to think it necessary to correct him. This species (*Macacus speciosus*) is, by the way, interesting as the most northerly in its range of all monkeys. It has a stump tail and thick greyish fur, set off by a brilliantly red face, brightest in the female.

The most remarkable-looking of the Macaques is the so-called Wanderoo—this name really belonging to a Ceylonese Lungoor—or Lion-tailed Monkey (*Macacus silenus*). This animal, which comes from Southern India, is black all over, with a rather short tail tufted at the end, and a full ruff of grey hair round its black face. The young one has no ruff, and its face is like fair human skin, so that the contrast between the infant, so like a tiny wizened child, and its black-faced whiskered mother is more than ordinarily comic. It is not a common species, but one that always attracts attention by its appearance, and so has long been well known in captivity.

DIANA MONKEYS

By Louis A. Sargent

THE DIANA MONKEY

(*Cercopithecus diana*)

THE Diana Monkey is one of the most notable species in the world, and always attracts attention in menageries, from its showy pied colouration and quaint "goatee" beard. The sexes are alike, and the young animal much resembles the older ones, being already bearded even when quite small.

There is, however, a certain amount of individual difference, the bright colour at the region of the thighs varying from light yellowish buff to bright bay. This monkey would appear to be very proud of its beard, as it is said to carefully hold it out of the way with its hand when drinking. According to some recent authorities, the monkey here called the Diana, which has for a long time borne that name, is not the true *Diana* of Linnæus originally described, but the Roloway (*Cercopithecus roloway*). The real animal is very similar, but has a quite short beard, partly black in colour, and the abdomen black. Until, however, some book on Mammals similar to the British Museum Catalogues of Birds and Reptiles is published, it does not seem advisable to alter a generally accepted name, and, in any case, popular names cannot be changed like scientific ones, once they have found general acceptance.

The Diana is not only a pretty and graceful monkey, but a very lively and playful one; as it grows old, however, it loses this amiability and becomes more reserved and disagreeable. It is chiefly known from menagerie specimens, for, as with most of these African monkeys, there is little on record about its wild life; it comes from the West Coast, and is well known in Liberia.

The group of Guenons, to which it belongs, are the common and characteristic monkeys of Africa, and as they do fairly well in captivity, and some are especially hardy, they are the best known monkeys in captivity here also, with the exception of two or three of the com-

monest Asiatic Macaques. These Guenons, of which there are at least forty species, making the group the most numerous among the monkeys, are very easily recognised, in spite of the great variation in colour between different species. They are all long-tailed monkeys, and of very much the same shape, well-proportioned and long-tailed, with short faces; their cheek-pouches are large, but the seat-pads small. Their fur is thick and short, and, whatever its colour, is of a grizzled or pepper-and-salt type over much of the body, the individual hairs being marked with light and dark rings.

In the Diana these rings are white and black, producing an iron-grey effect, and this colour is found in a few others; but the commonest tint is olive-green—a very curious hue for a furred quadruped—produced by rings of black and yellow on the hairs. Only two, the Patas and the Nisnas (*Cercopithecus patas* and *C. pyrrhonotus*) are chiefly red in colour, and these have peculiarly long limbs, and appear to live more on the ground than the others.

As a rule, the Guenons are essentially tree-monkeys, and most of them come from the great forest regions of West and Central Africa. They are extremely active among the boughs, and feed on fruit and leaves, with the addition of insects and birds' eggs, &c.; in fact, they are, like the Macaques, omnivorous. They live in troops, under the direction of a leading male, who acts as sentinel or commander-in-chief, having different notes or expressions which he uses in giving his orders. The Guenons, however, do not appear to be very noisy monkeys. Of course, there is much quarrelling among them; but they will, like the tribe in general, unite against a common enemy, and carefully attend to each other's fur, cleaning it and freeing it from thorns, burrs, and parasites.

Monkeys, by the way, are popularly supposed to be always flea-hunting; but, as a matter of fact, parasites have little chance of existence on a monkey, unless it is kept alone with no friends to look after its coat; the constant picking and scratching that goes on is really more a sort of curry-combing, and is the means by which the fur is kept neat and in good order. What monkeys find and eat on each other are little lumps of secretion from the skin. The young of these monkeys are carried at first clinging below the body, but afterwards mount on to their mother's back.

The Guenons are well known to the natives of Africa as very destructive animals; they constantly raid cultivated plots, and not only destroy more than they eat, but carry off all they possibly can in their cheek-pouches and their hands; a monkey has been seen to go off with five ears of maize at once. In their turn they are used for food by men, and sometimes their skins are made into furs; while among other enemies they have to dread Leopards, large Snakes, and Eagles.

Although the Diana has been selected for illustration on account of its beauty and conspicuous appearance, and is a well-known animal in captivity, it is not by any means the best known of the group, that distinction belonging to the Green Monkey (*Cercopithecus callitrichus*), also West African. This species is olive-green, with a black face and yellow whiskers; it is a hardy animal, will live outdoors in England with proper shelter, and has produced young in captivity. In spite of its scientific name, it appears not to be the Callithrix (beautiful-furred) of the ancients, which was more probably the splendid Guereza Monkey. The Green Monkey is said to present the curious peculiarity of having no voice. This monkey has been introduced into St. Kitts and Barbadoes in the West Indies.

In South and East Africa a very common species is the Vervet (*Cercopithecus pygerythrus*), which is very much like the Green Monkey, but has the whiskers white instead of yellow, is greyer in tinge of coat, and has black hands and feet instead of grey, and the tip of the tail black instead of yellow, while it also has a reddish patch just under the tail instead of a yellow one. Sir H. H. Johnston observed that the monkey frequented native gardens on Kilimanjaro, at a height of 5000 feet; he also says that he ate it frequently, and found it went very well in a stew. In the case of a specimen born in the London Zoological Gardens in 1893, it was noticed that the young animal had a curious habit of sucking both its mother's nipples at once.

Most of the monkeys of this group are about the size of a light terrier, but one of them, the Talapoin (*Cercopithecus talapoin*) is only about as large as a cat, and is thus the smallest monkey in the Old World, though quite a giant compared to some of those in the New. The Talapoin is a very quaint-looking little monkey, with a round head and large eyes surrounded by yellow rings, a black nose and

large black ears, and yellow whiskers. The general colour of the coat is olive-green above and white below. This pretty little animal is unfortunately scarce, though a fair number have been imported of late; it comes from West Africa.

THE MANGABEYS

THE Mangabeys (*Cercocebus*) are a small group of monkeys which are considered to be intermediate between the Guenons and the Macaques. They are large monkeys of slender form, with long tails, and dark-coloured fur as a rule, which is not grizzled. Their faces have a very pleasing expression as a rule; the skin is light-coloured, and their upper eyelids are conspicuously white.

They all inhabit Africa, and seem to have much the same habits as the Guenons; in captivity they live well, and are very active and good-natured. Those most frequently seen are the Sooty Mangabey (*Cercocebus fuliginosus*), which is dull black shading into slaty below, which is said to keep much on the ground in the wild state; and the White-collared Mangabey (*C. collaris*), which is slate-coloured above and has a white collar and under-parts, with the crown of the head bright red-brown, whence the name of "Cherry-crown" Monkey given it by animal dealers. Both of these species are West African. There are less than a dozen species of Mangabeys altogether, but these two are among the best known of imported monkeys. There is at the time of writing a very curious white Mangabey at the Zoo, which has been described as a new species under the name of Jamrach's Mangabey (*C. jamrachi*); it is not a complete albino, as its eyes are brown, though its face and hands are flesh-colour; but it will very possibly turn out to be only a variety after all, since albino varieties do not necessarily always show complete albinism by having pink eyes, as we see with white dogs and cats, and with the White Lungoor of Ceylon above mentioned.

MANDRILLS
By Louis A. Sargent

THE MANDRILL

(*Cynocephalus mormon*)

Both in strength and in the attention it attracts the Mandrill comes next to the great man-like apes, and, indeed, its very name would seem really to belong to the Chimpanzee, for an old Dictionary of 1681 says that "Drill" means a "large overgrown ape or baboon, so-called," while an early woodcut of the "Mandrill," in William Smith's "Voyage to Guinea" (1744), is certainly intended for the superior animal; to say nothing of the accompanying description, which is that of an undoubted Chimpanzee.

Anything in the shape of a monkey less man-like than the old male Mandrill can scarcely be imagined, and, indeed, the Baboons, of which he is the chief, depart further from human form and feature than any other monkeys. In the Mandrill the difference is accentuated by the great size of the head, with its long, swollen, ridged muzzle, so brilliantly decorated with blue and scarlet. Like all the typical monkeys the Mandrill is a true quadruped, habitually going on all fours, the hind-feet being flat on the ground, and the fore-feet only touching it by the under surface of the fingers. The body is remarkably short and stout, and the limbs also short and robust; the hands and feet are small and neat-looking for so huge and burly an animal, and the former look particularly human. The tail is a ridiculous two-inch stump, carried erect and set on very high; the hind-quarters are very thinly haired, the skin here being really beautifully coloured with scarlet, azure, lilac, and pink. The coat generally is thick and rather long, of an olive colour, the hairs being ringed with yellow and black much as in the Guenons.

The male reaches the size of a very large dog when adult, and stands five feet high when on his hind-legs; he does not attain his full face-colour till he cuts his great canines—which are as big and formidable as a Leopard's—at nine years old. Till then his face lacks the red tints, as the female's always does.

She has also a much smaller head and less swollen muzzle, and is much smaller altogether; the immature male resembles her. The infant Mandrill, of about the size of a cat, is a most comical little being, large-eyed and short-faced, though already showing the furrowed cheeks and yellow beard, and is absurdly playful, the very antithesis of his beetle-browed, glowering, sullen-looking father. The old Mandrill is credited with great ferocity, and with about every other bad quality an animal can possess; and in its wild state, in West Africa, little else is known about it except that the natives hold it in great dread. It is omnivorous and sociable, and frequents rocks and trees indifferently.

As a menagerie inmate, it has long been well known and borne a very bad character. Dangerous it is no doubt, its savage temper and great strength rendering it as terrible an antagonist as a Leopard would be; but after being acquainted with several adult male specimens, I must say that they seemed to me rather reserved and dignified animals, and certainly no worse-behaved than any other Baboons. They have a very curious habit of turning round so as to show their bright-hued hind-quarters; but this is well meant, the animal instinctively displaying his decorations behind as well as before. The beautiful colours of the face have been observed to fade when the animal is unwell, much as may be seen with the comb of the cock under similar circumstances. The Mandrill is not a noisy animal, though it occasionally gives vent to a grunt.

The Mandrill in captivity not only relishes animal food, which is natural and desirable for all omnivorous monkeys, but has a strong taste for alcohol; the late Mr. W. Rutledge, in his day the leading animal dealer in Calcutta, always maintained that a daily drink of beer or whisky-and-water was good for Mandrills, and certainly I never saw specimens in finer condition than those he had bought young and cared for well for years—for Mandrills seem always to be exported young. One of his specimens had the interesting trick of refusing to drink from a bottle of beer unless he saw the label; this animal I never saw, and the story would be incredible, only that Rutledge explained to me that, though the appreciation of the beer was instinctive, the scrutiny of the label was an acquired detail; no doubt the animal had been trained to it by giving him water in an unlabelled bottle.

A Mandrill which was in the old Surrey Zoological Gardens a century ago has become quite historical; his name was "Happy Jerry," and he not only drank grog, but smoked a pipe with apparent enjoyment. This was the animal which was once invited to dine with George IV. at Windsor, and apparently behaved quite respectably—for that occasion, at all events.

The name Drill is still used in its original signification, being applied to the only other baboon closely resembling the Mandrill, and also coming from West Africa, and better known in menageries than at large. This species (*Cynocephalus leucophæus*) is slightly smaller and less powerfully built than the Mandrill, and has a more soberly coloured coat, and a black face, only the lips being red. The cheeks are less swollen than in the other species, and have only two furrows, but the hind-quarters are nearly as brilliant. The female and young differ from the old male much as in the Mandrill.

Both these species are hardy in captivity, and will live in outdoor dens in England; the fine male Drill in the Belle Vue Gardens at Manchester has, at the time of writing, been there for twelve years.

The same hardiness characterises the Baboons generally; indeed, except for their very short tails, heavier build, and conspicuous sexual colouration, the Drill and Mandrill fairly typify the group. Most Baboons, however, have a tail of fair length, which is carried in a peculiar way, rising an inch or two from the root, and then hanging straight down. They are all found in Africa or Arabia, and generally prefer rocks to trees. They are highly gregarious, and feed much on insects and lizards, and do not fear to devour scorpions, first seizing them by the tail and pinching off the sting from it. Such prey they hunt by turning over stones. Several will unite to do this if the stone is too big for one, and in general they show a strong idea of co-operation—so much so, that on account of the great size and powerful canine teeth of the males, they are much feared by other animals. Even the Leopard only attacks stragglers, and they will show a bold front, or even assume the aggressive, to man himself. They have a particularly disagreeable habit of rolling stones down on their enemies.

Indeed, in spite of the brutish look produced by their long dog-like muzzles and active quadruped gait on the ground, these large ugly

monkeys undoubtedly come nearer to humanity in their mental faculties than any other creatures but the great man-like apes. Their usual note is a kind of bark, and they have a curious habit of gibbering silently with the lips when they mean to be pleasant.

There are about a dozen species of the typical Baboons, of which the best-known are the Sacred Baboon (*Cynocephalus hamadryas*) of Arabia and Abyssinia and the Chacma (*C. porcarius*) of South Africa. The former is a grizzly-grey animal with a tufted tail; the male is adorned with a cloak of long hair, and is a statuesque and majestic animal when seen seated; the ancient Egyptians worshipped it as the incarnation of the god Thoth, and trained it to work for them.

The Chacma (*Cynocephalus porcarius*), which is as big, though not as heavily built, as the Mandrill, is an olive-coloured animal, with a black face. It is a great deal too well known at the Cape, committing depredations not only on crops, but on sheep, for it tears open young lambs, drinking the milk in their stomachs, and eating the flesh.

It is a terrible antagonist to dogs, very hard to shoot, and will take doses of poison which will kill anything else—is, in fact, a serious all-round pest. Yet it can be trained to be most useful; the most remarkable case of this is one which was authentically reported and became widely known, some years back; a signalman at the Cape, who had lost his legs, taught one of these Baboons to work the points for him, and it also propelled his trolley, and indeed was an indispensable assistant in his employment.

The Gelada Baboons (*Theropithecus*), of which there are two species, both large, maned, and dark-coloured, connect the Baboons with the Macaques to some extent, having the nostrils not at the end of the snout, as in Baboons generally, but some distance back. A further link is found in the Black Baboon of Celebes (*Cynopithecus niger*). This animal, found at the extreme limit of the range of monkeys in the East Indies, is, like the Macaques, of moderate size, about equalling a spaniel, and has a face intermediate in length, and the position of the nostrils, between Baboons and ordinary monkeys. It is black all over, both in hair and skin, and is practically tailless, the tail being only a rudiment about an inch long. Although not a common monkey, it has often been exhibited at the Zoological Gardens.

RED-FACED SPIDER-MONKEYS
By Louis A. Sargent

THE RED-FACED SPIDER MONKEY

(*Ateles paniscus*)

In this animal and its allies we find the highest type of the New World monkeys, which are readily distinguished from those of the Old World by the broad partition between the nostrils, which open sideways, those of the Old World apes and monkeys being separated by a narrow partition as in man, and looking forwards. The New World monkeys never have seat-pads or cheek-pouches, but it is only among some of them that one finds the prehensile tail, which attains its greatest perfection in the Spider Monkeys.

It is bare for a considerable distance on the under-surface at the end, and is very sensitive, and amusingly independent in its action, often being raised in front of the monkey's head, and taking hold before the hands, in a way which irresistibly reminds one of the proverbial tail which tried to wag the dog. It seems, indeed, that one of these monkeys whose tail is injured loses its nerve to a great extent, thus showing the great dependence it places on its "fifth hand," which is not only useful to swing by, but will grasp and bring to hand objects a little distance off. The actual hands of the monkey are somewhat imperfect, as the thumb is wanting, as in the Guerezas of the Old World; the great toe, however, is well developed, but not opposable to the other toes as in Old World monkeys, a peculiarity which runs through the family. All the typical New World monkeys also have four more teeth than the Old World ones, there being an extra pre-molar on each side of both jaws.

The Spider Monkey, like all American monkeys, is a forest animal; it frequents the tops of high trees, where it moves about in an erect position, in this, as in its slender form, recalling the Gibbons of the Old World. Its food consists chiefly of fruit, and it does not appear

to display the strong appetite for animal food which is so characteristic of the small American monkeys.

It is a sociable creature, and usually found in large troops, sometimes numbering as many as a hundred. This is about the largest of the American monkeys as far as dimensions go, being two feet long in the body, with the tail six inches more, though some other species considerably exceed it in weight. The black coat is common to both sexes, and is constant in colour, but there is a certain amount of variation in the hands, which sometimes have a tiny rudimentary thumb; this may be present on one of them and not the other.

Like other Spider Monkeys this species is esteemed as human food, being eaten not only by the Indians, but also by Europeans, though naturally, in the case of the latter, with reluctance, owing to the human aspect of the animal. The meat itself would appear to be good enough, as Bates says of an allied species, the White-whiskered Spider Monkey (*Ateles marginatus*), that it was the best-flavoured he ever tasted, being like beef, but with a richer and sweeter taste. It is very lean and dry, and will keep well for a long time if smoke-dried. This Spider Monkey probably often finds an enemy also in the great Harpy Eagle (*Thrasaëtus harpyia*), which is known to prey on monkeys of this kind.

Many of these Red-faced Spider Monkeys are captured as pets, in which capacity none of their kind are superior. The creature's face is a singularly pleasing one for a monkey's, being very human and pathetic in expression, and its disposition is remarkably gentle and affectionate, so that it readily learns to accompany its owner.

Bates gives an amusing account of an old female, which was very sensitive to language; its owner, a Portuguese, would sometimes roundly abuse the poor monkey, which would thereupon exhibit all the symptoms of extreme sorrow, rocking itself to and fro and wailing pitifully, while it rubbed its long arms backwards and forwards over its head. When, however, its owner changed his abusive expressions for terms of endearment, its grief was soon appeased, and it came and sat beside him.

Although not a common monkey in Europe, the species is still no

rarity, and has often been exhibited in our Zoological Gardens. Its range extends from Northern Brazil to Eastern Peru; but it does not range to the south beyond the limits of the great Amazonian plains, its place there being taken by the White-whiskered Spider Monkey above mentioned. This is slightly smaller, and grey in colour below, with the face mostly black, but diversified by white on the surrounding fur.

Altogether there are about a dozen species of these typical Spider Monkeys, with long straight fur and slender bodies; they range from Peru northwards to Mexico, the species found there (*Ateles vellerosus*) being remarkable for its long coat, which is variable in colour, but usually black or brown above and cream-colour below. In South America these monkeys are known as Coaitas.

In South-western Brazil is found a monkey of a peculiar type which connects the Spider Monkeys with the Woolly Monkeys or Barrigudos, next to be noticed. This Woolly Spider Monkey resembles the typical kind in its long limbs and tail, but has a stouter and heavier body, clothed with short dense woolly fur of a brown colour. There appears to be but the one species (*Brachyteles arachnoides*), but this is so variable in the development of the thumbs that two or three forms have been described; sometimes it may have a small nailed thumb on both hands, sometimes only a wart, and sometimes this on one hand and the little thumb on the other; or, as is usually the case, no thumb at all. This monkey is smaller than the typical Spider Monkeys, but seems to resemble them in general habits; it is, however, a rare animal, and not much is known about it.

THE BARRIGUDOS

The true Barrigudos or Woolly Monkeys (*Lagothrix*) are very peculiar-looking animals. Their limbs are of moderate length, with well-developed thumbs, and their tails fully prehensile; their heads are round, and their bodies heavy and bulky, showing a "corporation" which fully accounts for their Portuguese nickname of "Barrigudo"

—paunchy or big-bellied. Their fur is short, but very thick and close and of a woolly texture. Their range extends from Ecuador to Venezuela, but there are only two species, of which Humboldt's Barrigudo, or the Negro Monkey (*Lagothrix humboldti*), is the best known. This is a large animal, much heavier than the Red-faced Spider-Monkey, and clothed in iron-grey fur, with the head and extremities black. It is not a very active animal, and lives on fruit, which it devours in great quantities, as might be expected from its corpulent appearance. Its portly carcase is in great request for food among the natives, by whom it is greatly persecuted in consequence. It is also frequently kept as a pet, in which condition it is found to be gentle and affectionate, while its very quaint appearance—its face being absurdly like that of a negro—is an additional recommendation. It has frequently been exhibited in our Zoological Gardens.

BROWN CAPUCHINS
By C. E. Swan

THE BROWN CAPUCHIN

(*Cebus fatuellus*)

THE Brown Capuchin, being the species most commonly brought to Europe, is much the most familiar of the South American Monkeys, of which it may be said to exemplify the typical or average type. In size about as large as a cat, it is a well-proportioned animal, with limbs of moderate length and well-developed thumbs and great-toes, which cannot, however, be opposed to the other fingers, so that the hands, both fore and hind, are so far less perfect than those of the Old World Monkeys.

The tail is prehensile, but has not the extreme sensitiveness and independence of action found in the Spider Monkey's, and, in conformity with this less degree of delicacy, it is hairy all over, and shows no bald surface below at the tip.

The coat, which is short, thick, and glossy, shows no sex difference in colour, but it is extremely variable in shade, some specimens being much lighter in colour than the typical hue shown in the picture, even ranging to a pale yellow.

There is much variability, too, in the hair of the crown, some writers considering the so-called Horned Capuchin (*Cebus apella*), which has it rather long and parted in the centre so as to form two horn-like crests, as only a variety of this species, while the Smooth-headed Capuchin (*C. monachus*) is also very like the present species.

In fact, although about sixteen kinds of Capuchins, ranging from Costa Rica in Central America southwards down to Paraguay, have been described, it is doubtful how many are really distinct, as they are so similar in general appearance and so variable in detail.

One, however, which is that most frequently seen in captivity after the Brown Capuchin, appears to be really distinct, and certainly looks very different. This is the White-throated Capuchin (*Cebus hypoleucus*), which is a smaller, slighter, and more delicately-formed animal, especi-

ally about the head. Its face is very naked, and of a flesh-colour just like human skin; its neck and shoulders are straw-colour, contrasting with the dark hue of the rest of its body; and on the crown is a patch of very short black fur, like a little cap. It is more gentle and delicate than the Brown species.

The Capuchins are to America what the Guenons are to Africa, the common and characteristic monkeys of the country, found all over the forest regions, and often approaching and pilfering from the cultivations of men. They live in troops, which travel from tree to tree under the direction of leaders, springing from bough to bough and swinging themselves by their tails, the young being of course carried clinging to their mothers according to the usual monkey custom. They seldom come to the ground, and when there do not move so actively as the common monkeys of the Old World. In walking they place the flat of the whole hand on the ground, and do not support themselves on the fingers only. Some will make great leaps in the air, from one tree to another fifty feet below, their tails being of course of great assistance in righting themselves after such a leap.

Their food, as with other monkeys, consists partly of fruit, and when they visit a plantation to steal, they will carry away all they can; but they have a very strong propensity for animal food, devouring all sorts of insects, even the largest beetles, and harrying the nests of birds. Indeed, as in captivity they have been known to kill such large and powerful species as Macaws and Toucans, few of their feathered neighbours can be safe from their attacks.

They have a great variety of notes, though not given to uttering loud cries, and their common expression is a kind of tittering or twittering sound; when pleased they smile in a very human manner. The intelligence of these monkeys is undoubtedly very great, as shown by their actions in captivity, and they need all of it to escape such foes as Jaguars, Eagles, and Boas, which they are liable to fall victims to in the forests. In many works will be found the statement that the Capuchins are the monkeys most commonly seen in captivity; but, whatever may have been the case some decades back, it is not so now, and

even the Brown species is a scarce animal compared with the ordinary Asiatic Macaques and African Guenons. It is also more delicate, though this may be partly due to the fact that people into whose hands it falls do not allow for its carnivorous propensities, so that it is kept on too low a diet.

With a great deal of the ordinary monkey malice and mischief, the Capuchin displays a great capacity for affection to people to whom it takes a fancy, and its great intelligence makes it about the most attractive of all pets for people who like an interesting animal. A very excellent account of the ways of a tame Brown Capuchin is given by Romanes in his book "Animal Intelligence," he having borrowed a male of this species from the Zoological Gardens for the express purpose of study. A diary of the monkey's proceedings was kept by the late professor's sister, who had the chief charge of the creature, which, nevertheless, did not show any fondness for her, much preferring the lady's mother, an invalid. His tenderness with her was touching to witness; he was always happy when on her bed, and would let her take anything away from him, though in such a case he would often vent his dissatisfaction on any one else, especially if he were laughed at. If unable to bite people through being chained up, he would throw anything at them which he could manipulate, and, when he found that throwing things at their feet did not annoy them particularly, would climb up wherever he could and launch his missiles at their heads. He had a great idea of the use of tools, used a hammer quite naturally for breaking his nuts, and often tried to open the trunk in which they were kept with a key, while he would use a cane to drive away the dog with. When confined away from his chief friend, he was more amiable to his younger protectress, and would put pieces of his food into her hand, and submit to be robbed of his treasures. Towards Professor Romanes himself he exhibited the very greatest affection, rather unaccountably, as that gentleman had very little to do with him.

This account of the intelligence of the Brown Capuchin is paralleled by Belt's remarks on the Nicaraguan kind which he kept tied up in his verandah. This monkey would bring otherwise inaccessible articles

within his reach by launching a swing, which hung near, in their direction; and when there were young ducklings about he would lure them to their destruction by holding out a piece of bread to them with one hand, while keeping ready to seize them with the other. His notes were extremely varied, and one could tell, his master found, by the noise he was making, whether he was hungry or in the enjoyment of food, angry or frightened; so that he could be said to have a language. On one occasion he was seen to be making off with a milk-jug, walking on his hind-legs; and when he saw he was found out in the theft, he put it down without spilling any, uttering an apologetic note which he always used on such occasions.

From these accounts it would seem that the intelligence of the Capuchins cannot be much below that of the Chimpanzee and other higher apes; a sufficiently remarkable fact, as the American monkeys are always considered to be on a lower grade than those of the Old World.

RED HOWLERS
By Louis A. Sargent

THE RED HOWLER

(*Mycetes seniculus*)

ALTHOUGH not so familiar in its habits as the Capuchins, and but rarely seen in captivity, the Red Howler is perhaps the most generally familiar of the American monkeys, owing to its qualifications and propensity for making a noise in the world, and the consequent importance it has always assumed in the narratives of travellers, who sometimes allude to it, very incorrectly, as a "baboon." Although a large animal for one of the New World species, it does not equal the Spider Monkey in size, being more shortly and stoutly built. Its tail is thoroughly prehensile, being bald at the tip beneath, and it has normal thumbs on the hands. The face has a brutish expression, owing to the large development of the jaws at the expense of the brain-case, and the throat is swollen by the presence of a curious bony drum caused by an enlargement of the larynx, a structure which assists in the production of the remarkable voice of the monkey. To accommodate this organ the sides of the lower jaw are greatly expanded in depth, so that a Howler's skull is easily known from that of any other monkey.

The red colour of the coat is common to both sexes, but there is a certain amount of individual variation in the extent of the yellow tinge.

The Red Howler is widely spread over the northern portions of South America, living in large bands in the tops of the forest trees, under the leadership of a male, whose movements are followed by the rest of the troop with remarkable uniformity, "taking off" with a swing from their tails from the same branch as he has last vacated. The females carry their young on their backs, and the Indians accuse them of sometimes throwing their young down to facilitate their own escape when threatened by the hunters. Humboldt suggests that this is merely

accidental, and that the Indians, who do not admire the Howler's looks, and likewise object to its dismal vocalisations, carry their dislike so far as to cast aspersions on its character, just as, one may remark, Europeans revile the donkey because its figure and voice do not appeal to them in comparison with those of the horse.

At the same time, it may be remarked that native accounts of the habits of animals have a way of turning out to be correct, and it is possible that the Howler, whose character is morose and stupid, has really less affection for its young than monkeys generally.

The voice of the Howler is extraordinarily powerful for the size of the animal, and its roars are so modulated that one would think that a number of animals were engaged, and that a terrible fight was being carried through from start to finish. Nevertheless, it would appear to be the case that the whole of the apparent concert can be the result of the efforts of one animal, generally an adult male. The howling is mostly to be heard before dawn and after sunset, and the creatures are also especially noisy before rain, like so many other animals.

Whatever objections the Indians may have to the Howler in life, they keenly appreciate its flesh as food, and it is one of the most valued items on their game list. If killed, however, it does not come to hand at once, but hangs on to the tree even in death, and not till the muscles of the feet and tail relax does it drop from its perch aloft.

As a pet the Howler is not in any estimation, being surly and showing no particular intelligence; neither does it usually live very long in captivity. Specimens of it have, however, occasionally been on view at our Zoological Gardens, as well as of the Brown Howler (*Mycetes fuscus*), which is black when young, and of the Black Howler (*M. caraya*). In the last species the adult males only are black, the females and young being straw-coloured. This is the most southerly in its range of the Howlers, being found as far south as Paraguay. The most northern species is the Guatemalan Howler (*M. villosus*), which is black at all ages in both sexes. This species is only found in small bands of about half-a-dozen, and is one of the very few American

monkeys found in a cool climate, as it lives in the mountains of Chilasco at an elevation of 6000 feet, where the climate is cold and damp. There are only half-a-dozen species of Howlers altogether. Most of the other South American monkeys are little known, with the exception of the distinct family of the Marmosets, next to be noticed, but it is convenient here to pass them in review.

THE OUAKARIS

The monkeys of this genus (*Brachyurus*) are of moderate size, but larger than the Capuchins, and they are remarkable among New World monkeys for their short tails, which are non-prehensile, and not half as long as the body. Unlike the short-tailed monkeys of the Old World, however, they display no tendency to come to the ground. They are fruit-eaters, gentle in disposition, and tender in constitution; but all the three kinds have been exhibited in the Zoological Gardens. These are the Red Ouakari (*Brachyurus rubicundus*), which has a coat much like the Orang's and a bright red face; the Bald Ouakari (*B. calvus*), which has also a red face, but a white coat; and the Black-headed Ouakari (*B. melanocephalus*), which is black in the face and on most of its fur. They are all South American, and each inhabits a separate small area.

THE SAKIS

The Sakis (*Pithecia*) are closely allied to the Ouakaris, but have long tails, which are very bushy and not prehensile. Their whole coat is long and thick, and mainly black in colour; and they are well bearded, the most conspicuous in this respect being the Red-backed Saki (*Pithecia chiropotes*), at any rate in the male sex, the female having no beard. The male is said to drink from its hands, for fear of wetting this appendage. It is a fierce, unsocial animal, and hard to tame, but has been exhibited at the Zoological Gardens, as have all the other Sakis, four in number. The Hairy Saki (*P. monachus*) is said by Bates to be, although not a lively animal, remarkable for its affectionate disposition when tamed, at any rate to its owner. It is, however, very delicate; and none of the Sakis are common in captivity. All are found in South America only.

THE SQUIRREL MONKEYS

THE common Squirrel Monkey (*Chrysothrix sciurea*) is frequently brought to Europe, and so is a quite familiar species. It is of a very different type from any of those previously mentioned, being a very small animal, not much larger than a squirrel, with a greyish-yellow coat of short close fur, and a black patch on its flesh-coloured face. The back part of the skull is much enlarged, as in man, and, indeed, the brain of this little monkey is larger in proportion than our own. The long tail is not prehensile. This monkey is highly insectivorous in its habits, and makes a most charming pet. It is widely spread in northern South America; other species are found there, and some range to Central America, but there are only four or five in all.

THE TEETEES

THE Teetees or Whaiapu-Sais (*Callithrix*) are, like the Squirrel Monkeys, soft-furred animals, with non-prehensile tails; but they are not quite so small, and less remarkable in the shape of their heads, which are small and rounded. They have a wide range over South America, and, being noisy and sociable, are conspicuous in their own country; but they are very uncommon in captivity here, although feeding in much the same way as the Squirrel Monkeys and Capuchins. There are about a dozen species, but not more than half the number have been exhibited at the Zoological Gardens.

THE DOUROUCOULIS

THESE small monkeys (*Nyctipithecus*) bear a general resemblance to the last two groups, and are similarly not prehensile-tailed. They differ much, however, from all other monkeys, in their very large eyes and short inconspicuous ears, and in being nocturnal in habits. Their fur is grey and tan, and their faces curiously streaked with black and white. By day they sleep in little companies in hollow trees, and at night come out to feed on insects, small birds, and fruit; at this time they also indulge in howls and caterwaulings. They are found in both Central and South America, but there are only five species, and none are common in captivity; but three of them have been exhibited by the Zoological Society, and the first live specimen of the group I ever saw I met with in Calcutta, a curious place in which to find a rare animal from South America.

LION MARMOSET
By Louis Sargent

THE LION MARMOSET

(*Midas rosalia*)

THIS little Monkey, whose extreme beauty attracts the admiration of every one, whether in the ordinary way they like Monkeys or not, is not very much larger than an English Squirrel, and resembles that animal in having the feet in the form of "paws," furnished with sharp curved claws, and with the thumb and great toe not opposable, so that they do not in the least resemble the hands—fore and hind—of ordinary monkeys, except with regard to the great toe—really small in this animal—which has the nail usual in monkeys. There are no seat-pads or cheek-pouches, and the teeth are only thirty-two in number. This is the same as that found in the Old World monkeys, but the arrangement is not quite identical, these animals having two pre-molars and three molars on each side of each jaw, whereas in the Marmosets the reverse is the case. The tail in the Lion Marmoset is long and inclined to be bushy, but is not prehensile. The ordinary name of the animal is derived from the long mane which surrounds its quaint little face, but it is also known as the Silky Tamarin, owing to the glossy texture of its fur.

The beautiful colour of the coat is common to both sexes, but varies a good deal individually, some being much more brilliant than others. I have seen one specimen which was quite orange all over, though as a rule the darker shade is confined to the under-parts.

The present species is one of the most widely-ranging of the Marmosets, being found from the Isthmus of Panama to South-eastern Brazil and New Granada. It is a forest animal, and keeps to the tops of the highest trees, where it lives in small troops. Its food consists of fruit, insects, and such small birds as it can capture. As, in captivity, it likes to have a box to retire into, it presumably sleeps

in hollows in trees. Its cry is a rather bird-like twitter. It is not very commonly seen in confinement, but it makes a most charming pet, its chief drawback being that it is so very shy and difficult to tame, although it is said to be very intelligent.

As a general rule it has been the custom to treat these as animals requiring much warmth, but lately that well-known amateur, Mrs. Johnstone, who has been particularly successful with rare and remarkable birds, such as Birds of Paradise, has recorded that she keeps these little Monkeys with great success in a place like an aviary, with a warmed indoor compartment, and a netted outdoor one, to which they have access at will during the day. The animals here are in beautiful condition and full coat, but their home is situated in the south of England and has a southerly exposure.

Wherever such creatures are kept, it is important to bear in mind that they are to a great extent animal feeders, and to treat them accordingly. The Lion Marmoset has bred in captivity, but I do not know of any case in which the young have been reared successfully as yet. They are two in number, this being the rule among Marmosets, and forming one of the distinctions between them and the higher Monkeys.

The present species is about the largest of the Marmoset group, which, as a rule, do not exceed our Squirrel in size, and are sometimes even smaller, as in the case of the Pigmy Marmoset (*Hapale pygmæa*), which is not so big as a Rat, and is thus the smallest monkey known. It has also the widest range of all the American monkeys, ranging from Brazil up into Mexico, whereas most of the Marmosets, about a score in number, are found in Central and Southern America. The Pigmy is a soberly-coloured little creature, being simply light-brown, with the tail ringed with black—the latter a common marking among Marmosets, though never found in any other Monkeys.

In general form, appearance, and habits, the Marmosets are very similar, being all small animals with squirrel-like paws, and often very squirrel-like actions, for in most cases they prefer to run along and round the large branches and trunks instead of climbing about in the

ordinary monkey fashion. Those of them which are known as Marmosets proper (*Hapale*), as opposed to Tamarins (*Midas*), are characterised by their long and protruding incisor teeth, and by the lower canines not being longer than the incisors, but the distinction is not of much importance, and some Tamarins are commonly called Marmosets. The Lion "Marmoset," for instance, is a "Tamarin."

The commonest of them in captivity are the Brazilian White-eared and Black-eared Marmosets (*Hapale jacchus* and *H. penicillata*), which are of a sort of tabby-grey colour, with long tufts in front of the ears, white in the former and black in the latter species. There is also a white spot on the forehead.

These miniature Monkeys are very freely imported, but it is to be feared that their lives in captivity are too often shortened by their being treated too exclusively as fruit-eaters, whereas, as above remarked, they need plenty of animal food, and no doubt if this were duly supplied, they would not be found to be so delicate as is commonly supposed. Young of the common Marmoset have been successfully reared, and it has been noticed that the male takes his turn at carrying them as well as the female. Indeed, the gentle, affectionate nature of these little things is one of their greatest charms, and they do not display the ill-conditioned spitefulness of ordinary Monkeys, though they will bite sharply enough on occasion.

The Pinché (*Midas œdipus*) is a fairly common Marmoset, remarkable for its crest of long snow-white hair; the under-parts are also white, and the upper surface brown.

The Red-handed Tamarin (*Midas rufimanus*) is black, with tan-coloured paws; and the Black Tamarin (*M. ursulus*), has black paws. All these three are fairly familiar in captivity, though, like the Lion Marmoset, very scarce indeed compared to the ordinary grey kinds.

Several rarer ones have, however, been exhibited at the Zoological Gardens, including the Pigmy Marmoset above mentioned. The rest are the Golden-headed Marmoset (*Midas chrysomelas*), which is very like the Lion Marmoset, only black instead of golden-yellow, except on the head and paws. Very possibly this was the original form, and the

yellow animal is a variety which has become a permanent race, beginning as a sport, like the yellow variety of the common Rhesus Monkey. Geoffroy's Marmoset (*Midas geoffroyi*) of Panama is somewhat like the Pinché, but has merely a white spot on top of the head, not a long bushy crest; and the Moustached Tamarin (*M. mystax*) is much like the Black Tamarin, but has white fur on the lips. Then there are two beautiful white species, the Silky and the Black-tailed Marmosets (*Hapale chrysoleucus* and *H. melanura*), the latter with a black tail, and the former with a brown one; these beautiful little things almost rival the Lion Marmoset in beauty, but have not its ornamental mane.

The most remarkable of all the Marmosets has, however, never been exhibited here, and has, indeed, only been described in 1907. This is the Emperor Marmoset (*Midas imperator*), in which the male is decorated with a long white moustache, fiercely curled at the ends, which gives him a most absurd appearance, especially as the Marmosets are, except for their pretty little faces, much less human in appearance than any other of the Monkey tribe.

RUFFED LEMURS (Red Variety)
By Louis Sargent

THE RUFFED LEMUR

(*Lemur varius*)

THIS beautiful animal is the largest of the typical Lemurs, and is exceeded in size by but few species in the family to which it belongs; it about equals a terrier in dimensions. In the face it presents no human semblance whatsoever, the long muzzle being much like that of a fox, and the play of feature, so usual in monkeys, being quite absent.

The teeth are remarkable for the forward projection and narrowness of the incisors of the lower jaw, and for the fact that the canines are very similar and lie on each side of them, though there is an erect tusk-like tooth in this jaw, in the form of the first grinder, which is sharp and pointed. In the upper jaw the canines have the usual tusk-like form and downward direction.

The paws, however, are more like human hands than those of many monkeys, the thumb being large and well developed; the feet are similar in structure, with a large opposable great toe; all the fingers and toes have flat nails, except the second toe, which has a sharp curved claw, with which the animal scratches itself.

The limbs are also particularly human in that the fore are distinctly shorter than the hind; this renders the Lemur's gait on all fours less agile than a monkey's, especially as it places the whole palm on the ground as well as the sole; on the trees, however, it bounds about with great agility. The tail is often carried raised and curved, so as to look like a note of interrogation; when the beast is at rest it wraps its tail round its body.

The habits of the typical Lemurs are very similar; they are nearly all tree-animals, and they live upon much the same food as most monkeys—leaves, fruit, and any small creatures they can capture. They are sociable in habits, and are said to be very noisy, the Ruffed species in particular giving vent to harsh roars, chiefly in the morning and evening; they are not, however, nocturnal, unlike most of the Lemur tribe.

The young Lemur or Lemurs—for there are often twins—are carried by the mother for some time, like a young monkey, but not quite in the same way. The little monkey clings lengthways to its mother's chest, while the infant Lemur lies across her stomach, passing its long tail round her waist behind and wrapping the end round its own neck, thus fairly tying itself to her. When older it often rides on her back, as monkeys do under similar circumstances.

The Ruffed Lemur is remarkable among its relatives not only for its size, but for the length of its fur, and its remarkable variety of colouring, in which it is not exceeded by any animal, and equalled only by few. The types usually seen are the black-and-white and the red; the latter, however, always has some black on the face and limbs and some white on the back of the neck. Intermediate specimens between these types also occur.

This species is found in the north-east of Madagascar; it is not so common in captivity as some of the smaller kinds, and in confinement does not seem so lively, nor does it breed in that condition. Its relations are more readily reconciled to captive life, and some of them breed more freely than any of the monkeys, especially the Black Lemurs (*Lemur macaco*). In this the male only is black, the female being brown with white whiskers; and he is black from birth, unlike many animals in which this colour is confined to the male sex. The note of this animal is a grunt.

A very commonly imported Lemur is the Ring-tailed species (*Lemur catta*). This is very distinct in appearance and habits. In size it is about equal to a Cat, and its fur is short and close, and very constant in colour, which is the same in both sexes. The general hue is silver-grey, with the face and feet white and a black patch round each eye; the tail is white, with numerous rings of black. This very beautiful animal comes from the Betsileo district of Madagascar, and, unlike all other Lemurine animals, is usually found away from trees, frequenting rocks, which it traverses with great agility. All the typical Lemurs are confined to Madagascar and the Comoro Islands.

THE SIFAKAS

The Sifakas (*Propithecus*), of which there are three species, all very variable in colour, and all confined to Madagascar, resemble the true Lemurs in general form and size, but have shorter muzzles, more like a Cat's than a Fox's. They are tree animals for the most part, but when they come to the ground do not go on all fours, but jump along on their hind feet. They are more purely vegetarian than any others of the Lemur family, and are very delicate in captivity. Only one kind, the Diademed Sifaka (*P. diadema*) has been exhibited at Regent's Park, and this quite recently; it only lived a few days. The Avahi (*Avahis laniger*), a closely allied animal of small size and brown colour, has, however, been several times in that collection. Another relative of the Sifakas is the Endrina or Babakoto (*Indris brevicaudatus*), the largest of all Lemurs, and remarkable in having but a rudimentary stump of a tail. It is pied like the Ruffed Lemur, but is also a very variable animal. It is well known in Madagascar from the dismal howls it constantly utters, and is reverenced by the natives, but seems never to have been brought to Europe alive.

THE MOUSE LEMURS

The Mouse Lemurs (*Chirogale*), Dwarf Lemurs (*Microcebus*), and Fat-tailed Lemurs (*Opolemur*) are all Madagascar animals of small size and nocturnal habits. Several sleep during the dry season, having previously got very fat, especially about the root of the tail. They are usually about as big as Rats, and are inhabitants of the tree-tops, where they build nests and feed on fruit and insects; they are marvellously active, jumping about as quickly as birds. In colour they are brown or grey.

THE GALAGOS

The Galagos (*Galago*) are the only large group of Lemurs found outside Madagascar; they are confined to Africa, but widely spread there. They vary in size from that of a Cat to that of a Rat, and have soft grey or brown fur, long bushy tails, and large eyes. Their ears, however, are their most remarkable peculiarity, being capable of folding up till they are hardly noticeable, although usually large and conspicuous; in this point the Galagos are unique among beasts. They are nocturnal and extremely active, bounding for yards on their hind feet. They have a strong appetite for animal food, and do well in captivity, so that some are generally on view in Zoological collections.

THE SLOW LEMURS

THE few species of this group are also found outside Madagascar; the Potto and Awantibo (*Perodicticus potto* and *P. calabarensis*) in West Africa, and the Slow Loris (*Nycticebus tardigradus*) in Eastern Asia. They are slow-moving, omnivorous, nocturnal animals, about as big as Guinea-pigs, and much like miniature Bears in shape; the Slow Loris has no tail, and the other two very short ones. In these African forms, too, the forefinger is reduced to a mere stump. The Slender Loris (*Loris gracilis*) of South India and Ceylon, is a little tailless creature about as big as a Rat, with huge eyes and peculiarly slender limbs, painfully like those of a human being when wasted by disease or privation. All have been frequently kept in captivity.

Two Lemur-like animals, the Tarsier and the Aye-aye, are so distinct from all the rest, that each is put in a family of its own.

THE TARSIER

THIS extraordinary little animal (*Tarsius spectrum*) is found in the East Indies from Sumatra to the Philippines, and is nocturnal and insectivorous. It is barely as big as a Rat, with large eyes and ears and a small pointed snout. Its tail is long and bare, though tufted at the end, and its body-fur thick. The feet are peculiarly long from hock to toes, and the tips of these and the fingers are expanded as in Tree-frogs; like these creatures, also, the Tarsier hops about the trees by means of its powerful hind-legs. It seems never to have been brought to Europe alive.

THE AYE-AYE

THE Aye-aye (*Chiromys madagascariensis*) is the most remarkable in appearance of all its tribe, and would certainly not be taken for a Lemur at first sight. It is as big as a Cat, dark-brown in colour, with a long bushy tail, and all its fingers and toes are clawed, except the great toe, which has a nail. The middle finger of the hand is as thin as a wire, and the creature uses this to clean itself with, and also for a pick and probe in seeking wood-boring grubs. It gnaws down to the tunnels of these with its powerful teeth, which are just like those of rodents, the incisors being only two in each jaw, enamel-faced and continually growing, while, as in rodents, there are no canines. The first set of teeth, however, are more like those of other Lemurs. Besides insects, the Aye-aye feeds on fruit. It is a nocturnal animal, regarded with superstitious fear by the inhabitants of Madagascar, where alone it is found; but nevertheless a good many specimens have reached Europe, especially of late years, and several have been exhibited in the London Zoological Gardens, where the habits of this strange creature were carefully studied by the late Mr. A. Bartlett.

LION AND LIONESS
By Louis Sargent

THE LION

(*Felis leo*)

THE Lion is the acknowledged king, not only of the Cat family and the order of carnivora, but of the beasts at large, and it cannot be denied that he deserves his position on account of his imposing presence and the thunderous majesty of his voice.

The mane, the special insignia of the feline monarch, is, however, as every one knows, absent in his consort, and is not developed in the young male before his third year; while it varies much in colour and development, like the beard in man, being mostly black in some specimens and all yellow in others, while it may be absent altogether. The variation is purely individual, for a lion with a fine long black mane may be own brother to an animal with a scanty yellow one.

The colour of the coat is also rather variable, some specimens having more of the reddish or yellowish tinge, and others being rather greyer; but extreme variations, like black and white, seem to be unknown in the Lion.

The form and expression of the face are also noticeably different in different specimens, some having a much nobler aspect than others. The black tuft at the end of the tail is a most constant point; it often conceals a short claw-like horny appendage, which used in ancient times to be considered the instrument by which the animal goaded himself into frenzy when enraged. As a matter of fact, it is too small to be of any importance, and a similar tail-claw is found in such mild creatures as some of the smaller Kangaroos or Wallabies.

Lion cubs, which are born, unlike kittens, with their eyes open, are closely but indistinctly spotted, and traces of this marking often last throughout life on the legs and under-parts of some specimens, especially Lionesses. The pupil of the eye in the Lion, as in all the great Cats, is always circular, not contracting slit-wise as in the common Cat. In

all essential details of structure, however, the King of Beasts agrees with this familiar creature, as he does also in most of his habits and attitudes. In connection with this, it may be mentioned that while the Lion often, like the Cat, tucks in his fore-paws when lying down, he often also extends them in front like a Dog, and thus any adverse criticism of sculptured lions represented in this, undoubtedly the most majestic, position, is quite misplaced. The Lion differs from most Cats in not climbing trees, though it is possible that young and light individuals might not find this feat impracticable.

Although characteristically an African animal, the Lion also ranges through Western Asia into North-west India, where a few specimens linger in the Gir Forest in Kattywar. The idea that the Indian Lion is maneless is, by the way, quite an erroneous one. The range of the Lion has been contracting during all the time which the animal has been under human observation — and few wild creatures can have been observed more thoroughly. In Herodotus' time, between 400 and 500 B.C., Lions inhabited Europe, being found in Thrace, but by the beginning of the Christian era they had disappeared. There is evidence that they once ranged into Central India, and in Africa, their main home, they have now become much reduced in numbers both in the north and south of the continent.

They are naturally absent from the damp dark forests of the equatorial region, for the Lion is generally an animal of open dry country, although he likes cover, such as reeds, bushes, or long grass. Like most Cats, he is nocturnal, and is bold and dangerous by night, though little to be feared by day. He captures his prey by surprise, and, seizing it with his powerful claws, kills it by a bite or two on the neck or head. Sometimes the death-stroke may, indeed, be dealt with the paw, as there is a case on record of a man having been killed inside a tent by a lion which thrust in its fore-leg for the purpose, and then noiselessly hooked out his victim. Human beings, however, are not the normal prey of the Lion, which generally feeds on large wild animals, such as the larger Antelopes and Zebras, or on domestic cattle. When the animal does take to man-eating, he is a terrible scourge, and is apparently

worse than the Tiger, displaying greater boldness. The case of the two man-eaters of Tsavo, in East Africa, who devoured more than a score of human beings before being themselves accounted for, is fresh in the memory, and has been the subject of a most interesting work.

It is therefore obvious that the terrors of the Lion have not been exaggerated by early writers, but that where he has come into contact with well-armed and resolute natives or with Europeans, his courage has naturally suffered by the elimination of the fiercer individuals, a result certain to occur with all such dangerous animals.

The Lion, in spite of the ancient ideas about his magnanimity, is quite willing to sink his dignity and eat dead and even putrid meat, if he finds a convenient carcase; the Zebra is said to be his favourite food. His own kill he often conceals, and watches it to keep off carrion-animals. In feeding, he begins by disembowelling the prey and burying its entrails; he then eats the internal organs and the flesh from the hind-quarters. He hunts for his Lioness, to whom he is much attached, when they have a family, and indeed is a remarkably sociable animal, unlike most wild animals of this family; troops of as many as a dozen or even a score of Lions have been seen. When these roar in concert, the effect is indescribably grand, if rather terrifying; and when an animal is attacked by several Lions at once, its end is very painful, as all fall upon it without system, and mangle it terribly.

The male animals naturally often fight for a mate, and in such a case the Lioness, as appears usually to happen with her sex among animals, calmly awaits the victory of the strongest. She has usually two or three cubs at a birth, and goes with young only four months. Many cubs appear to die during the period of teething, the males especially. Otherwise there are few causes for Lion mortality; some, however, must perish from conflicts with each other, and others meet death on the horns of some of their more formidable prey, such as the Oryx Antelopes, while they are said to fear the Spotted Hunting-dog (*Lycaon pictus*) so much that an imitation of its cry will keep them at a distance. Old Lions have been found living on Mice and

Rats, and even devouring grass to stay their hunger, so that the end of the King of Beasts, if it comes naturally, must be a sad one.

In captivity the Lion thrives well, and breeds freely; in fact, if the beast were sufficiently in demand, it would have been domesticated by this time, and as it is, many of the finest specimens shown in menageries have been tame-bred. Such an one was Hannibal II. of the Clifton Zoological Gardens, a magnificent black-maned animal, and certainly the finest Lion I ever saw. Captive Lions in Europe, at any rate, grow finer manes than wild ones, and also assume a fringe of long hair along the under-parts, whereas the wild animal has only a bunch behind the arm-pit.

Many accounts show that the Lion in captivity is susceptible of much attachment, and has a better disposition than most of the Cats, though of course it is unwise to rely too much on such an animal; and the sad fate which overtakes so many of the "tamers" is notorious, though the nature of their exhibitions is certainly such as to afford some excuse for the unfortunate animals compelled to take part in them.

TIGER
By C. E. Swan

THE TIGER

(*Felis tigris*)

THE Tiger is not only the most brilliantly coloured of the Cats, but the largest and most powerful; for he is more evenly developed than the Lion, whose hind-quarters are less massive than his fore-parts, and he also attains to a larger size and greater weight. A fine Tiger measures about ten feet in total length, and few exceed this measurement.

The Tigress is very similar to her mate in general appearance, but is rather smaller and less stoutly built, especially about the head, and she lacks the long hair which forms the whiskers at the side of the face in the old male.

Young cubs are striped just like their parents, so that stripes form the characteristic livery of the beast under all circumstances.

There is, however, much individual variation in the development of these markings; it would hardly be an exaggeration to say that the fine animal in the illustration—the best Indian male in the London Zoological Gardens at the time—has twice as many stripes as either of two Nepal specimens also in the collection. In some Tigers, too, the individual stripes are to a great extent double, and the variation in details of pattern is almost endless.

Extreme varieties, however, are rare in the Tiger; a black one has once been seen, but though it was found dead its skin was not preserved. White specimens sometimes occur, and I have myself seen two skins of such; one, which was exhibited some years ago at a scientific meeting of our Zoological Society, showed the characteristic stripes in a pale fawn tint, while the other, which was fished, for my inspection, out of the pickling-tub in which it was being cured, in Calcutta, appeared to have no stripes at all on the hair, though they were to be seen on the underlying skin; much like the dark spots so common on the under-parts of white Dogs.

Tigers inhabiting climates with a cold winter assume a thick long coat at that time of year; this fur is, however, less brilliant in colour, and naturally does not show the stripes so well. In summer, judging from the Zoological Society's pair, the Siberian Tiger is indistinguishable from the Indian animal.

The fact that Tigers inhabit Siberia at all comes as a surprise to most people; but as a matter of fact the Tiger is essentially Asiatic, not merely Indian. He is found in the West on the southern shores of the Caspian, the ancient Hyrcania, and he extends through Persia and Central Asia, India and Burma, up to Saghalien in one direction and Java in the other, so that he must be able to bear great extremes of climate. In India his distribution is curious; he has never reached Ceylon, and he does not range high up in the Himalayas, in spite of his power of enduring cold. He has no aversion to wet low-lying localities, and, indeed, is never found far away from any water. He wallows in hot weather, and will swim long distances.

As ancient classical literature chiefly knows the Tiger as a Hyrcanian animal, and in consideration of the evidence afforded by the beast's distribution to-day, it would seem that he is a comparatively recent immigrant into India, or at any rate that he was formerly far less common there. The recession of the Lion in that country may have been caused by the invasion of this rival, for the two animals would certainly not live in peace side by side.

One often reads of "Tigers" in Africa and America; but in this case the name is wrongly applied. In South Africa the Leopard is commonly called Tiger, while the Tiger of America is really the Jaguar.

The Tiger is, though it hardly ever climbs trees, a forest animal, and, like most Cats, nocturnal in habit and generally solitary, though a pair may be found together, or a Tigress with cubs. His food, like that of the Lion, consists of large animals as a rule, but in case of need he will devour almost anything living, down to frogs and locusts, and has no aversion to making a meal of carrion.

Like the Lion, he attacks the neck of his prey, and begins his meal on the carcase at the hind-quarters. In the ordinary way he does not

attack man, and is not feared by the forest-living primitive tribes of India; but, as is well known, Tigers often take to man-eating, and such an animal becomes a terrible scourge.

The ordinary game-killing Tiger is not only harmless, but a beneficial animal, as the Deer, wild Pigs, Nilghai, &c., on which he preys, are very destructive to the crops of the native farmers. But when he takes to feeding on cattle he becomes a great nuisance himself, and is always liable to end as a man-eater, owing to the likelihood of collisions with the aggrieved owners of his prey. There is, however, a case, recorded by Sanderson, of a notorious cattle-killer which haunted a district for twenty years, and during that time only killed one man; this unfortunate individual had got in the tiger's way during a beat, and it was generally felt that his death was due to misadventure rather than malignity on the part of the animal.

The amount which such an animal may cost a district may, however, be estimated when one considers that a Tiger will kill two Bullocks a week, and naturally does not choose the worst. Exceptionally, a young Elephant may fall a prey to the tiger, and there is even a case known in which an adult was killed by the great Cat, though it did not die at the time, but some days afterwards, having been terribly lacerated along the back-bone. One original Tiger has even been known to specialise as a Bear-eater, and cases of Tiger cannibalism have occurred; indeed, the Tiger is not a "family man," like the Lion, and cannot be trusted with his own cubs. He is not only much less sociable than the Lion, but also much less noisy, though his roar, when heard, can hardly be distinguished from that of his rival.

The Tiger is a very esteemed sporting animal in India, and, except in the case of a man-eater, any unsportsmanlike method of destroying it is indignantly scouted by Europeans. It has, indeed, been suggested that the rewards now paid by the Government for the destruction of Tigers should be done away with, except, of course, for man-eaters. Tigers are seldom pursued on foot, as Lions are in Africa; the sportsman more usually rides on an Elephant, or sits upon a platform or "machan" constructed in a tree near the animal's

last victim, or a live bait—usually a Bullock or young Buffalo—tied up to entice it, and waits for a chance of a shot.

The skin, as every one knows, is a valued fur for rugs, but is not nearly so expensive as the Lion's, except in the case of the heavily-furred Siberian skins.

The Tiger has long been a familiar exhibit in menageries, but is scarcer and more expensive than the Lion. In my time, a good adult Tiger was worth between £30 and £40 even in Calcutta.

This is due to the fact that the Tiger does not breed at all freely in captivity, even in its own country, so that the supply has to be obtained by capturing the wild animals, preferably when young.

The Tiger has, however, on more than one occasion produced hybrids with the Lion in menageries; these animals are large and fine, but inferior in beauty to the parent species, the males having but a short mane, and the coat being but scantily striped. The captive Tiger, though to some extent amenable to kindness, is less reliable than the Lion in its temper, though not so treacherous as the Leopard.

LEOPARDS AND SPOTTED DEER

By Louis Sargent

THE LEOPARD

(*Felis pardus*)

THE Leopard is the third largest of the Old World Cats, but it is a remarkably variable animal, so that it was long believed, and probably is still by many people, that the big spotted Cats, at any rate in India, belonged to two species, the Leopard and the Panther.

It is now pretty well established, however, that "Panther" is only a courtesy title applied to a big finely-developed Leopard, approaching a Tigress in build, and nearly equalling a small one in size, such animals being naturally more inclined to attack large prey than the smaller and more cat-like individuals which are the typical Leopards. A big "Panther" will measure eight feet from nose to tail-tip, whereas a small "Leopard" may be as much as a yard less in length.

In addition to showing such great differences in size, Leopards show much variety in colour, though their proverbial inability to change their spots still holds good as a rule. Thus, I have seen a skin in which the black colour of the spots was replaced by fawn, and the well-known Black Leopards owe their colour to a darkening of the ground-tint, on which the spots can still be seen in certain lights. These Black Leopards are not uncommon in certain localities, especially in the Malay Peninsula; they are mere "freaks," as one may occur in the same litter as a spotted one, but a pair of Black Leopards in captivity will produce black cubs.

The Leopard has much the widest range of any Old World Cat, being found over Africa generally, including the heavy forests of the west, where the Lion does not venture, and over a large part of Asia also, from Manchuria to Ceylon (where it is called the Cheetah), and from Asia Minor to Sumatra. It ascends the Himalayas to a much greater height than the Tiger. Leopards from colder climates, at any

rate the West Asiatic race, have paler colouring and thicker fur than the tropical type, thus somewhat approaching the Ounce; and African Leopards have smaller and closer spots than Asiatic ones, many more of the spots being solid instead of rosette-like. Black Leopards are very rare in Africa, and when they occur seem to owe their hue to the confluence of the spots rather than the darkening of the ground-colour.

The wide distribution of the Leopard can easily be explained by his great adaptability; for he can exist and pick up a living where a Lion or Tiger would starve, and can and does live alongside these beasts. He frequents either rocks or forest, and is a fine climber, like an ordinary Cat; his variegated coat is well adapted for concealment in the woods, and at a distance, when seen in the open, is not more conspicuous than the Lion's is, as it then appears uniform; he is indifferent to water, and can do without it for days. As to food, no creature, from small birds to Bullocks, is safe from him; he is a deadly enemy of the monkey tribe, and has a peculiar fancy for the flesh of Dogs, which he will venture to steal even from a verandah, for he is a much bolder animal than the Tiger. This attribute makes him far more terrible when he takes to killing human beings, which occasionally happens; indeed, almost the worst man-eater on record was the celebrated Leopard of Seeonee in India, which killed a couple of hundred people before it was brought to book itself.

It may be mentioned here that the name "Panther," which is of genuine classical Greek derivation, means "the hunter of everything," and shows that the ancients were well acquainted with this audacious plunderer. Being much commoner than the Tiger, and, owing to his cunning and versatility, remarkably difficult to circumvent by sportsmen, the Leopard, in India at all events, is regarded more as vermin than as a game animal. He is generally solitary in habits, and has a most peculiar call, very like the sound produced by cutting wood with a coarse saw.

In eating his prey, it is observed that a Leopard begins, unlike the Lion and Tiger, at the fore instead of the hind quarter, and by this

his "kill" may be easily identified. He often prudently takes the remains of a partly eaten carcase up a tree, and thus is less likely to be robbed of food than are the Lion and Tiger.

Leopard cubs are not so distinctly spotted as the old animals; they are often taken and reared, but as pets they are very objectionable, being peculiarly treacherous and dangerous as a rule. The animal is, of course, a well-known exhibit in Zoological Gardens; it breeds fairly well in captivity, and is so easily procured in India that in my time an adult specimen was not worth more than three or four pounds in Calcutta. The Black variety is, of course, always comparatively scarce and expensive, and it is a curious fact that individuals of this colour almost invariably show a more savage temper than the spotted ones. Of several specimens I have seen, all bore out this commonly received opinion except perhaps one; but this I only saw once.

That different colours accompany differences of disposition and constitution is well known to every one who has to do with Horses, and it would be interesting if this correlation were to be worked out in connection with all animals which present well-marked colour variations.

The greater ferocity of the Black Leopard may account for its comparative scarcity, since an undue degree of this quality in any animal is liable to lead it into conflicts which may prove fatal, even in the case of such a powerful and active creature as is the Leopard. An interesting exception to the general untrustworthiness of the captive Leopard's disposition was furnished by a West African individual kept many years ago at Coomassie, which was allowed to go about loose, and even to associate with children, along with whom he would stand looking out of a window. It is even recorded that on one occasion his playfellows pulled him down by the tail, as he was in their way, so that he must have been as gentle as large dogs so often are in juvenile company. This very amiable animal, however, did not long survive after arrival in England, and it is possible that his disposition might have become less pleasant when he grew older.

A reward is paid by the Indian Government for the destruction of Leopards, and as the skin is also in demand for rugs, &c., there is considerable inducement for the destruction of the animal on the part of native huntsmen, who kill more of these animals than are brought to book by Europeans.

PUMA
By C. E. Swan

THE PUMA

(*Felis concolor*)

THE Puma, the only other large self-coloured Cat besides the Lion, usurps the name of that animal in many parts of America, to which continent, like the Jaguar, it is restricted. It is an animal of many aliases, being sometimes known—in North America at any rate—as the Cougar, and more frequently as the "Painter," a corruption of "Panther." Although, of course, quite a distinct animal from the Panther or Leopard, it is better compared with that animal than with the Lion, which it only resembles in colour, whereas in size, form, and general habits its resemblance to the Leopard is very great.

The average length of the Puma is that of an ordinary-sized Leopard, but there appears to be at least one individual on record as big as a Lioness. On the whole, however, Pumas do not vary in size so much as Leopards do, nor are they so diversified in colour. Their range of colour-variation is much like that of the Lion, some individuals being redder and others greyer, while absolutely black and white varieties seem to be unknown. In Patagonia the Pumas are particularly grey, though a reddish variety, with a shorter tail, is also found there. There is no sex-difference in Pumas, but the young cubs are very unlike the old animals, being strongly spotted with black, and having black rings on the tail—which seems to point to the fact that the Puma was once a spotted animal in a previous stage of its evolution.

The Puma has such a wide range in the New World that it may well be considered the characteristic beast of that continent, for it ranges from Canada in the north right down to the extremity of South America. It is not at all particular about climate or situation, living on mountain-tops near the snow-line, in forests, or on open plains; it is an active climber among either trees or rocks, and will make its lair in a cave or a swamp, or under the giant grasses of the Pampas. On the whole,

though a much more widely-ranging animal than the Jaguar, it is perhaps less attached to forests and water-side haunts than that animal.

It preys on a great variety of creatures, attacking, like the Leopard, anything it is quick enough to capture and powerful enough to kill, and even adult Horses do not always escape it, though it is more particularly destructive to colts, as well as to calves. It is a deadly foe of the Rhea, or American "Ostrich," and of the Guanaco or wild Llama, while that curious social burrowing rodent, the Vizcacha, is keenly hunted by it. When attacking domestic animals, it gives the preference to Horses, at any rate when young, but in default of horse-flesh, it can very well put up with mutton. To the unfortunate Sheep it is a most deadly foe, for it is a bloodthirsty creature, and, if it can get access to a fold, will think nothing of killing half-a-hundred sheep in a night. In North America it is a merciless enemy of the Deer, and even its own relative, the Lynx, falls a victim to it at times. It is also reported to be on bad terms with the Jaguar, which is sometimes found in the same localities, and, what is much more remarkable, to get the better of that animal in the fights which naturally ensue. It is true that the Jaguar is much stronger and heavier, but the Puma has the advantage in lightness and agility, and by virtue of these qualities it is said also to grievously annoy the huge Grizzly Bear in the northern parts of its home.

With all these awe-inspiring attributes, it is curious that the Puma should be a kittenish and playful creature, always ready for a game, and that it is hardly to be regarded as a serious foe to man. A regular man-eater seems to be an unknown creature among Pumas, nor are they nearly so dangerous when brought to bay as Leopards are, though there are not wanting instances of men being injured by them with or without provocation. They will also follow people in a way which is, to say the least of it, uncomfortable, though Mr. W. H. Hudson regards this interest as merely friendly curiosity, and states that the Gauchos consider the Puma as man's only friend among the wild animals. He even cites instances in which a Puma has not only refrained from attacking human beings whom circumstances had placed

in its power, but even defended them against other wild animals. The fact that the Puma in captivity is undoubtedly less dangerous and more tractable than almost any other large Cat, goes a good way towards substantiating these ideas as to its natural disposition towards humanity, with whom it may have some instinctive inclination to friendship, such as, in the Dog, has made the latter animal domesticable. A similar case would be the natural attachment which that curious little animal, the South African Meerkat (*Suricata tetradactyla*) shows, when tamed, to the Dog itself.

In spite of this amiability—or at any rate comparative inoffensiveness—towards man's person, the Puma is, by its inroads on his live-stock, one of the most noxious animals he has to deal with, and is consequently persecuted by him wherever it is found. In consequence of this, it has been exterminated in all anciently settled districts, and is now rare over most of the United States, for instance.

In compensation it supplies a useful skin, which is employed by the Patagonian Indians for their mantles and boots, though for the latter the hind-leg of a large specimen only will serve. These people also eat and appreciate the flesh of the Puma, which is generally pretty fat even in spring, when Guanacos and Rheas are lean. Captain Musters, living with the Indians and faring as they did, as described in his very interesting book "At Home in Patagonia," says that Puma "goes better" boiled than roasted, and that it tastes like pork.

Compared with the Lion and Leopard, the Puma, like the Tiger, is a remarkably silent animal; in the breeding season, however, it expresses its feelings in a kind of magnified caterwauling, and tame well-disposed specimens in captivity purr like cats. The Puma does well in this condition, and sometimes breeds, having one or two cubs in a litter, though in a wild state twice as many are produced. It is not, however, so commonly kept as the Leopard, being a less attractive exhibit; indeed, our leading dealer in India, the late W. Rutledge, once told me that the native rajahs—formerly great amateurs of animals—did not care about it, regarding it as "only a Cat." As might be expected, it stands the climate of Bengal as well as that of England.

Its remarkable inoffensiveness, compared with that of most other large Cats, has been alluded to, and is especially shown by the fact that specimens have been allowed to go about outdoors among people; but the Puma does not hold with the proverb "Love me, love my dog," and is generally roused to fury at the sight of this hated animal. That caged Pumas should not always be amiable is not surprising, seeing that Dogs themselves notoriously become surly if tied up too much, so that there seems good reason for regarding the Puma as being as much unlike the Leopard in nature as it is in colour of coat.

OUNCE
By C. E. Swan

THE OUNCE

(*Felis uncia*)

THE Snow-Leopard, as the Ounce is often called, is noteworthy as being the only one of the "Great Cats" which is confined to temperate and cold climates. It is only found in the heights of the Himalayas and the Central Asiatic ranges, and is seldom seen below eight thousand feet. Its range, however, is a wide one, as it is found from Turkestan to China. In accordance with the bleak nature of its haunts, its fur is peculiarly thick and full, especially on the tail, which member is very long. In size the Ounce about equals an ordinary specimen of the Leopard, the pale mountain form of which, as above remarked, somewhat approaches it. The true Snow-Leopard, however, has hardly any yellow tinge at all in its fur, and the rings of spots are much larger and wider than those of the Leopard proper; the face in the present animal, also, is much shorter, and has more of the mild character of that of the domestic Cat.

In disposition, indeed, the Snow-Leopard appears harmless enough from our point of view, as it has never been known to attack human beings, but with regard to other animals it appears to be as fierce and indiscriminate a foe as is the ordinary Leopard; its ordinary prey are the wild Goats and Sheep found in its haunts, especially the Burrhel or Blue Sheep (*Ovis nahura*); indeed, in consequence of this it is known in the Simla district as *Bharal-hay* (Burrhel-tiger) according to Mr. Lydekker. It is also a destructive foe to tame Goats and Sheep, and even Ponies fall victims to it; probably, also, it preys on the mountain-haunting Game-birds, such as the great Partridges known as Ramchukors or Snow-Cocks (*Tetraogallus*), which also frequent high elevations in the mountains of Asia. Being a little-known animal even in the wild state, it is not surprising that the Ounce is seldom to be found in captivity; indeed, till the year 1891 it had not been exhibited at our

Zoological Gardens, nor have any of the few specimens which have lived there survived very long.

It may be thought that the foggy atmosphere of London, so different from the pure clear mountain air of the Ounce's natural haunts, may be accountable for this, but in that case it is curious that the animal's frequent prey, the Burrhel, stands the same conditions so well, for this Sheep thrives and breeds well in the Regent's Park Gardens.

The Ounce appears to be fairly tameable, and Captain Baldwin, in his work "The Large and Small Game of Bengal and the North-Western Provinces of India," gives an interesting account of a young one which came into his possession when he was in Tibet, in a rather curious way. He found that one of the local Tibetans had killed a female Ounce by rolling a big stone down on the unfortunate beast as she lay asleep in the sun outside her den, and some days later came across one of her cubs, being led to the discovery by a pair of large birds which were mobbing it. The poor creature was nearly starved, being evidently unable to provide for itself, although about as big as a Lynx, and was not captured without some difficulty, and at the cost of a good many scratches. However, in ten days, although much stronger, it had become accustomed to sleeping on the bed of its owner, who considered that it would have in time become quite tame; but unfortunately it died quite suddenly, and was suspected to have been poisoned by his native servants to avoid the trouble it gave them.

THE JAGUAR

(*Felis onca*)

ALTHOUGH living at the other side of the world, and not next door to the Leopard, as it were, as the Ounce does, this great American Cat is so like the former animal that at the first glance it is likely to be passed over as the same species. Closer comparison, however, shows that the Jaguar's rosettes of spots have for the most part an extra dot in the centre, which is wanting in those of the Leopard; the American animal

is also more heavily built, especially about the head and paws, and it is, indeed, the most strongly framed of all the Cats. In size it equals the largest Leopards, and indeed often exceeds them, being the third most powerful of its family. In some cases it is said almost to rival the Tiger in size, and, as remarked above, usurps the name of that animal in South America. Black Jaguars occur, just as black Leopards do, as casual sports, and they are similarly credited with being especially ferocious in disposition.

The Jaguar is chiefly confined to the forest regions of America, and to warm climates, not ranging farther north than Mexico; it used, however, to inhabit the Pampas of Argentina, though never so numerous there as the Puma, and now almost extinct. Although such a heavy animal, it is a skilful climber, and is sometimes found in such impenetrable parts of the Amazonian forests that it has perforce to hunt monkeys and such-like prey in the trees, being unable to get about on the ground. It has a strong liking for the vicinity of water, and not only takes to that element quite readily, but preys on aquatic animals more than any other large Cat, lying in wait for large fish, fresh-water Porpoises, and Otters, and being a deadly foe of the great fresh-water Tortoise (*Podocnemis expansa*), whose meat it skilfully scrapes out of the shell with its paw. One of its most common victims is the Capybara (*Hydrochœrus capybara*), but even the American Tapir does not escape it, and it will overcome full-grown cattle and horses also. Besides this, it attacks birds, and is altogether even more versatile in its hunting than the Leopard in the Old World. Sometimes man falls a victim to it, and the anecdote related by Darwin, of the Jaguar which found its way, being driven from its haunts by a flood, into a church at Santa Fé in Paraguay, and killed two of the officiating priests one after another, is well known.

The note of the Jaguar is unlike that of the Leopard, being a sort of repeated short grunting roar, much like the concluding short notes of the roar of the Lion; it is most frequently to be heard in the breeding season. As in the case of the Leopard, the cubs have rougher fur with less well-defined markings than the adults; they seem to be

precocious, following their mother when only a fortnight old and not larger than Cats.

The Jaguar, although not a positively rare animal in captivity, is not nearly so common in menageries even as the Tiger, and very much rarer than its own compatriot and reputed rival and enemy, the Puma. It lives well, however, in the captive condition, and has not only reproduced its own species in confinement, but has produced a hybrid with the Leopard.

CLOUDED LEOPARD
By C. E. Swan

THE CLOUDED LEOPARD

(*Felis nebulosa*)

It is a pity that this remarkable animal has not a special name of its own, for its alternative title of Clouded Tiger is as unfortunate as that given above, the beast being neither Leopard nor Tiger, but as distinct from both of these as are the Ounce, Jaguar, or Puma. Indeed it differs markedly from all the other great Cats in its shape, which is long and low, the legs being unusually short for the size of the animal. The tail is usually very long, and the head is also of an elongated shape, while, owing to the eyes being dark brown, the expression contrasts strikingly with the pale-eyed savagery of the ordinary Leopard. Yet the creature is remarkably well armed, its canine teeth being longer in proportion than those of any other living Cat. The closeness of the coat, and the distribution of the markings in great patches bordered with a darker tint, make the general effect of the colour much like that of the great Pythons found in the same countries, and this pattern no doubt in both cases tends to conceal the creatures by breaking up the outline.

The colour-variation is simply in tone, some specimens being redder and others greyer; but there is a good deal of difference in size. The first specimen I ever saw, a splendid male acquired years ago by the Calcutta Zoological Garden, was quite as big as any ordinary Leopard, but generally this Cat is only the size of a small-sized individual of that species, and so is the smallest of the six species distinguished as "Great Cats."

It inhabits South-Eastern Asia, ranging from Assam down the Malay Peninsula and islands into Sumatra, and in another direction to Formosa, in which island it does not possess so long a tail as it does elsewhere. It is always a forest animal, being a remarkably good climber, and spending much of its time in the trees, where it is wont to rest lying in the boughs, whence its Malay name of *Arimau-dahan*

(Tiger of the branches). Its ordinary food consists of birds and the smaller beasts, and although from its lithe activity and long fangs it would be a deadly foe to man if so disposed, it appears never to attack him, and is not considered in any way an objectionable animal except for its attacks on poultry.

Very little, however, is known of the creature's habits, and it is not at all common in captivity, although occasional specimens have reached Europe during many years past, and several have been exhibited at our Zoological Gardens. The last shown there was a female, and was a charmingly tame animal, as affectionate with her keeper as the most confidential ordinary Cat. This amiable disposition has been repeatedly noticed in these animals, and, in some cases at all events, they have proved friendly even with children, which is not by any means always the case with wild beasts, even when they are safe with adults.

In captivity heavy meat like beef and horse-flesh is unsuitable to this creature, and it is always best to give it goat's flesh or mutton, or preferably rabbits, pigeons, and such-like light and tender articles of food. It also needs a large cage fitted up with branches for climbing, so as to be able to exercise its remarkable agility, which is almost equal to that of a Squirrel.

THE OCELOT

(*Felis pardalis*)

In the marbled character of its coat, and in having dark eyes and a pink nose, the Ocelot of South America somewhat resembles the Clouded Leopard, but it is a very differently-built animal, having much the proportions of an ordinary Cat, though it is particularly stout and heavy in build. Although considerably smaller than any of the big Cats, it is a good-sized animal, about equalling a medium-sized Dog. Its colour and pattern are astonishingly variable, some specimens being brown and others grey, while the precise size and pattern of the colour-markings vary enormously, this being the most variable in colour of coat of all the Cats, as far as details of marking are concerned, though extremes like black and white do not occur. In general, however, the markings take the form

of rather large elongated patches, enclosed in black borders, of a colour darker than the general ground-tint, while the head and limbs have small solid black spots. The bodily size of the animal also varies a good deal, from about a yard in total length to nearly a foot longer.

In one or other of its numerous varieties the Ocelot has a wide range, reaching Arkansas in North America, and ranging south to Patagonia; but wherever it is found it is an inhabitant of wooded country. Like the smaller Cats generally, it preys on small beasts and on birds, and is credited with being very fierce. It is, however, not uncommon in captivity, and appears to be fairly easy to tame, though its temper is not by any means to be implicitly trusted.

THE SERVAL

(*Felis serval*)

The Serval, which is found all over Africa, is another Cat of medium size, measuring about four feet in length. It is peculiarly built, very slender, standing high on its legs, with a rather short tail and decidedly large ears, the more noticeable on account of the small size of the head. The coat is close and of a tawny colour, marked with bold solid black spots.

A form in which the spots are very numerous and small is distinguished as the Servaline Cat (*F. servalina*), but there seems to be no difference between this and the type except these markings. The Serval frequents bushy country, and feeds on game-birds and Antelope fawns; it is a good runner, and seems to approximate to the Cheetah—presently to be noticed—to some extent in its hunting-habits, as it certainly does, very markedly, in colour and length of limb.

It is not rare in captivity, and may become very tame; in East Africa, in 1892, I got a kitten of this species which bade fair to make a very nice pet, but unfortunately it died on the voyage home. One peculiar thing about it was that it showed no desire to attack some guinea-fowls I also had on board, though these form part of the natural prey of the species. It has been observed that an otherwise tame Serval is roused to ferocity by the sight of a negro, just as the really formidable Lion, Tiger, and Leopard sometimes are.

THE WILD CAT

(*Felis catus*)

It is, of course, out of the question here to go into the subject of all the various species of small felines known as "Wild Cats," found almost all over the world where Cats are found at all—*i.e.*, except in Madagascar and the Australian region.

But the Wild Cat of Europe and Western Asia, although now nearly extinct in these islands, and only lingering in the Western Highlands, deserves notice. It is rather larger and more powerful than any tame Cat, and has thick close fur, the length of which makes the tail appear blunt and round at the tip instead of pointed. The colour is just like that of some tame Cats, a rusty grey with dark streaks down the sides and face, and a ringed tail; in fact, it is a poorly-marked, unattractive, striped tabby. Its expression is surly and ferocious, and its disposition corresponding; it is a deadly enemy to all furred and feathered game, and will attack poultry and lambs, while when cornered it is a dangerous antagonist even to man. It usually frequents mountain forests, where it makes night hideous at times with its dreary caterwaulings. None of the Cats are so untameable as this apparently, even the Tiger being docile and contented in comparison, judging from those usually on view at the Zoo. It is therefore not surprising to find that our tame Cats appear to be the descendant of another species, although a closely allied one, the Wild Cat of Africa (*Felis maniculata*). This animal, although generally less fully striped than English Cats, is practically indistinguishable from the more uniform-coloured specimens one often sees in India, and would not be noticed as anything peculiar if seen roaming about our streets.

It was apparently domesticated first by the ancient Egyptians, and seems not to have reached Europe till only a few centuries before the Christian era, as the Greeks employed the Beech-Marten (*Mustela foina*) as the domestic mouser. The Tame Cat was evidently, judging from the laws for its protection, a scarce and valued animal in Britain at the time of the Conquest, when the Wild Cat was still common in the South. There has probably been some crossing between the two, and a kitten bred in the Zoological Gardens between a male Wild Cat from Scotland and an African female, was well striped and just like an ordinary tame kitten, though showing a ferocious temper; this, however, my pet Serval did at first. There seems to be no reason to suppose that the variously coloured coat or long fur of some domestic Cats are due to anything else than ordinary variation, and, indeed, the Cat has varied less than most animals which have been as long under human protection—no doubt because, until of late years, it has not been selectively bred.

LYNXES

By Louis Sargent

THE LYNX

(*Felis lynx*)

THE Lynx, the only large feline animal now found wild in Europe, is an imposing-looking beast, though it does not grow large enough to rank as one of the great Cats—not exceeding a moderate-sized Dog.

Its characteristic points are its remarkably short tail and the long tufts of hair at the ends of its ears; it is also a short-bodied, leggy animal compared with most of the Cats. The eyes have a circular pupil, and are light in colour. The coat of the Northern Lynx is heavy and thick, especially in winter, when it is less spotted and greyer in colour than in summer, but Lynxes vary a good deal both in tint and spotting, both individually and locally; the Himalayan Lynx, for instance, is almost without spots at all in winter.

As there seems good reason to consider the unspotted Canadian Lynx or "Lucivee" as a mere local race of the Northern Lynx of Europe and Asia, this Cat may be said to range all round the world, a distinction unique in the family. Indeed, it would not be straining matters much to include the Spotted Lynx (*Felis pardina*) of Southern Europe and the Bay Lynx (*Felis rufa*) of the United States as local races also; they chiefly differ from the Northern Lynx, as might be expected in more southern races, in being shorter-coated and having redder fur with more distinct spots. The former is the animal which the ancients regarded as sacred to Bacchus, and the latter is the "bobcat" or "wild cat" of American writers.

The Lynx inhabits forests or mountainous districts; it is an animal of considerable all-round abilities—in spite of its leggy build, it is a good climber, and often lies in wait for its prey in a tree, springing on it from some distance with great rapidity, so that it can capture even birds so active as Pigeons, while the clumsier Game-birds, such as Grouse, naturally fall an easy prey. It travels fast and far on the

ground, and swims powerfully in case of need, while its strength is such that, though it preys usually on the larger birds and smaller beasts such as Hares and fawns, it will on occasion attack Deer and even cattle —a case has even been recorded in which a Lynx, in Scandinavia, killed a Horse. To Goats and Sheep it is a deadly enemy; wild, it has been found killing the Burrhel or Blue Sheep in Tibet, and its ravages on tame creatures are very severe, so that it has been exterminated over a large part of Europe, and is now chiefly to be found in Northern Scandinavia, Russia, and eastwards through Northern Asia; a few, however, still inhabit the mountains of Central Europe.

The Lynx, although it is a really formidable beast, has apparently never been known to attack man unprovoked; and, when taken young, it can be easily tamed. This is the more remarkable, as it is a very bloodthirsty animal, killing for killing's sake, so that if it gets access to a sheepfold it destroys a large number of the inmates. It dislikes tame Cats, and they reciprocate the feeling; while, in America, it sometimes, as remarked in dealing with the Puma, falls a victim to a larger feline relative. So it does, at times, to the Wolf; but it will itself kill the Fox, and, in America, the Raccoon.

The female Lynx conceals her young in a cave or hollow of a tree, or some such sheltered hiding-place; she usually produces two or three kittens. This animal is of course often hunted, both on account of its valuable fur and to keep it down; it fights bravely against Dogs, uttering loud yells of defiance. One of the uses to which the fur is put is the manufacture of the well-known "busbies" worn by our Hussar officers. For these the skin is dyed, a "black Lynx" having so far only occurred in the poet Browning's imagination, apparently.

The flesh of the Lynx has often been used as food, and is said to be white and palatable, not unlike that of the Rabbit.

Lynxes are fairly common in captivity, but not nearly so well known in that condition as the more "sensational" Cats. It is of interest here to note that a specimen of the Tibetan variety was once kept for two years in good health in so unnatural a climate as that of Calcutta; but it was treated with great care, being always tied up in the shade, and

bathed with soap and cold water every morning, being afterwards rubbed dry with a towel. This gives a good idea of the tameness to which the creature will sometimes attain; as a contrast, may be mentioned an individual from the Caucasus at present in the London Zoological Gardens, which is so shy that it is difficult to get even a sight of it.

THE CARACAL

(*Felis caracal*)

THIS handsome Cat, though undoubtedly a near relative of the Lynxes, is very distinct from any form of these. Its general shape is similar, but it is more slenderly built, and has a much longer tail, though this is still shorter than that of Cats generally, only reaching down to the hocks. The long ear-tufts so characteristic of Lynxes, however, are particularly well developed in this species, whereas in the Bay Lynx they are hardly noticeable.

The coat of the Caracal is very close, and it has not the neck-ruff of the Lynx; the beast is self-coloured, being of some shade of reddish-brown, from chocolate to fawn. The ears are either jet-black, or grizzled black and white. In size the Caracal is not equal to the largest Lynxes, but exceeds most of the other minor Cats.

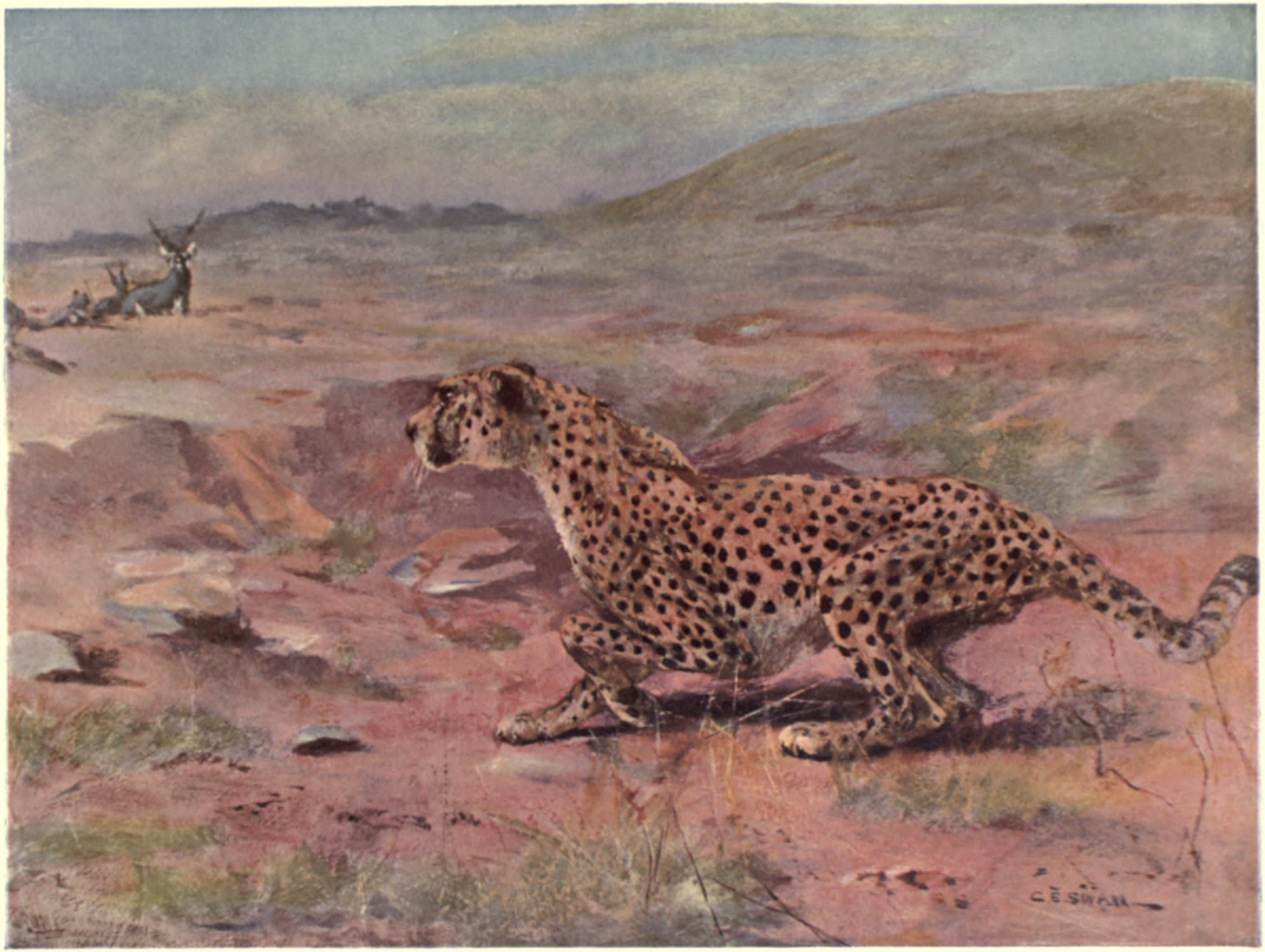
The Caracal is found both in Africa, where it ranges all over the continent, and through Western Asia into India, where it is found chiefly in the west. It is an animal of open, dry country, keeping to bush- and grass-jungle, and feeding on small Antelopes, Hares, and birds, especially large species, such as Bustards, Cranes, and Peafowl. It has a great advantage over such quarry as these big birds, which "get under way" heavily and comparatively slowly, as it will make bounds of a couple of yards into the air to bring down its victim, when it is literally "all over it" in an instant.

Its speed of foot is also very great, for it is said to be even swifter for its size than the Cheetah, and apparently runs down much of its prey in the same way. In South Africa, where it is known as the

"Rooi-Kat" (Red Cat), it has been found a dangerous antagonist when robbed of its cubs, and in India a famished specimen has been known to make an unprovoked attack on a native. It is, in fact, a thoroughly savage animal, and in menageries its continual grin and snarl are a strange contrast to the usual amiability of the Lynx; but some Caracals can be made tame enough, and there is one such in the London Zoological Gardens at the time of writing. Here, also, the young have recently been born for the first time in that institution; the kittens were two in number, and already brown, with black ears like their parents.

In former times, at all events, the Caracal used to be captured and employed in hunting like the Cheetah; and a cruel amusement was, and very likely still is, derived from letting a couple loose among a flock of tame Pigeons feeding on the ground, in order to see which could kill the most before they got away. It is said that the almost incredible number of a dozen might be cut down before the flock got clear.

One curious use of the animal is worth mention: the fur is in any case a handsome one, and the Boers in South Africa are firmly convinced that a rug of Caracal skins is a preventive of rheumatism, and Messrs. Nicholls and Eglington, who mention this, state that the fur even of the *dead* animal is highly electrical, as that of the living tame Cat is so well known to be.



CHEETAH
By C. E. Swan

THE CHEETAH

(*Cynælurus jubatus*)

ALTHOUGH the term "Cheetah" is simply the Indian word "chita" written according to pronunciation, and is applied in India to the Leopard as well as the present animal, in accordance with its signification of "spotted," it is a better name than "Hunting Leopard," as well as a more familiar one. For the Cheetah stands apart, not only from the true Leopard, but from all other Cats, in certain points of structure which are correlated with a somewhat different way of getting a living.

Of these the most important is the fact that the claws are only slightly retractile, and are thus always visible, and get worn at the tips as in the case of a Dog, whereas in all the other Cats, as every one may see for himself in the case of our domestic animal, the claws when not in use are completely drawn back and invisible, and always retain their sharpness.

In size the Cheetah about equals the ordinary Leopard, but is different in form, being much higher on the legs and slenderer in the body—it is, in fact, the Greyhound idea carried out in a Cat. The coat is comparatively coarse, and varies but little in colour, though a woolly-furred variety, with pale brown instead of black spots, was once procured from the Cape, and at first ranked as a distinct species, under the name of *Felis lanea*. The cubs have particularly long fur, which is grey in colour and unspotted, but, curiously enough, if this coat be clipped the spots can be seen underneath. It will be noted in the illustration that the spots are solid and single, not arranged in rosettes like those of the Leopard.

The Cheetah is an animal with a very wide range, being one of the few wild beasts common to Africa and Asia; in the latter country it is confined to the South-Western portion, and does not range east of

India. Neither is it found in the Malabar Coast of that country, or in Ceylon—the "Cheetah" of that island being the true Leopard.

It is not found in heavy forest, although it is able, in spite of its blunt claws, to climb trees on occasion; for its method of hunting is such as can only be practised successfully in the open, and accordingly it lives in districts where bush and rocks are the only cover; it is especially characteristic of dry districts, and does not ascend high mountains.

Its food is such animals as it may come across in the districts it inhabits—chiefly the smaller kinds, such as Hares, Gazelles, and large ground-birds. It seldom attacks tame animals, and has never been known to make an assault on man; but that it can master animals of considerable size and strength is shown by its preying on the Nilgai in India, though its more common quarry is the Blackbuck; in Africa also a pair have been seen to pull down so large and powerful a beast as the bull Koodoo.

The Cheetah's methods are a modification of those of the ordinary Cats—it begins by stalking its intended victim, but is not dependent on a mere short rush when it gets within its range, but pursues its prey for some distance and captures it by sheer speed, the chase sometimes lasting for nearly a quarter of a mile. The animal's fleetness is agreed by all observers to be something astonishing, and far superior to that of the Greyhound, for the Dog cannot fairly pull down the female Blackbuck, for instance, at all, whereas the Cheetah will often run up to her in a couple of hundred yards, though she may have a start for that distance; for the swift Cat, though he employs the tactics of his tribe at the commencement, is enabled by his speed to make his attack openly at the finish. When he overhauls his prey, he knocks its feet from under it with a blow of his paw, and then pins it by the throat. Often, of course, he is unsuccessful, and then gives up the chase; no doubt often through discouragement, but also because, like all Cats, he is really short-winded, being unable to keep up his marvellous speed for a really long run, unlike the Dog tribe. Thus, it has been repeatedly proved in India, that a horseman can ride down and spear a Cheetah after a

short run, while a Wolf can usually gallop straight away from his pursuer.

When thus overtaken, the Cheetah makes but little resistance, but is said to be apt to spring on the Horse from behind if chance gives the opportunity of so doing.

That the whole nature of the animal is not very savage or dangerous, as far as man is concerned, is proved by the facility with which it is tamed, and, indeed, it is much better known as a tame than a wild animal, for, though so widely spread, it is uncommon, and sportsmen seldom come across it. The popularity it used, at any rate, to enjoy among the Indian princes and other well-to-do natives has, however, resulted in its being largely captured and kept for hunting purposes, and it is owing to this that so much is known of its habits and powers.

The men who capture Cheetahs are in the habit of marking certain trees to which these animals resort to scratch the bark with their claws —a habit well known in all Cats—and also to play about together. Here they set nooses of dried antelope sinews, and when a Cheetah is captured, manage to muffle its head in a blanket, and secure it with ropes, and so drag it home.

After this the beast is kept sleepless and hungry for days, constantly scared by flapping cloths in its face, and roundly abused by the women, until it submits from exhaustion. Once tamed, the Cheetah is friendly with its keeper, and, the animal being commonly kept tethered to one of the light wooden bedsteads known as "charpoys," man and beast often share the same couch, as depicted in Mr. L. Kipling's "Beast and Man in India." A tame friendly Cheetah purrs like a Cat.

When taken out to hunt, the Cheetah is placed on a bullock-cart, with its keeper, and the cart is driven as near as possible to the Blackbuck herd destined for attack before unhooding their enemy. Should an Antelope be captured, the keeper runs up and cuts its throat, catching some of the blood in a bowl, and offering it to the Cheetah, which is meanwhile hooded. A good animal will run down three or four Blackbucks in a morning, but, of course, there is much variation in powers among them. Only adult-caught animals are of any use, it being

considered that they can only be taught their trade by their parents. Probably, also, they would never attain such vigour and high condition when reared in captivity; besides which it must be remembered that any animal caught leading an independent wild life has proved its fitness for this, whereas a creature which one rears by hand may have some defect in bodily or mental powers which would have soon proved fatal to it under the more rigorous conditions of nature, though not prejudicial in domestication.

The Cheetah, kept in the ordinary way in a Zoological Garden, is not a very hardy animal, and cannot be called at all common in captivity. Probably, if kept tame enough for handling, and often taken out for a run, under due restraint, it would thrive much better.

AFRICAN CIVET
By Louis Sargent

THE CIVET

(*Viverra civetta*)

OWING to its former repute as a producer of perfume, the Common Civet is one of the best known of its family (*Viverridæ*), a very varied assemblage of creatures restricted to the Old World, many of which, like the present, are often credited with being "Cats." Cats, however, they are not, although resembling those animals closely in many ways, and undoubtedly nearly allied; and it will be particularly noticed that the long foxy nose and comparatively small eyes are very different from the characteristic Cat countenance. The grinding teeth of the Civet are more numerous than those of the Cats, and it has five toes on the hind- as well as the fore-foot, armed with claws which are only partially retractible. This Civet is a large animal for its family, although not much bigger than a Fox.

The long hair along the ridge of the back can be bristled up when the animal is enraged, at which time it growls and snarls like a Dog, though usually silent.

The perfumed substance which it secretes is to be found in a pouch situated below the tail, and this pouch and its secretion is present in both sexes; the substance is greasy and pasty in consistence, and very strong in odour. When the creature feels itself overcharged, it squeezes out some of the secretion on any hard object, such as a log or stone. Other glands situated in the same region secrete a horribly offensive fluid.

This Civet is confined to Tropical Africa; it lives in wooded country, and has much the same habits as the Fox, hunting about on the ground at night for any small animals it can overpower, and being a great enemy to poultry. Besides animal food, it will eat fruit and roots.

It is easily kept in captivity, being omnivorous, and thriving well in even a small space, and is still kept to a great extent for its perfume, though this is no longer in such vogue among us Europeans as it was, judging

from his repeated allusions, in Shakespeare's time. It is, indeed, too strong and rank for our modern tastes; but it is still of some use in compounding other perfumes, though even for this, musk has largely taken its place. In the East, however, where taste is still in many matters remarkably like what it was among us three centuries ago, Civet is still much esteemed. To obtain it, the pouch is everted with the fingers, or the secretion scooped out with a wooden spatula. The operation can be performed twice a week, but as the Civet does not, at first at any rate, at all approve of it, and is not the sweetest-tempered of animals at the best of times, it is put into a cage in which it cannot turn round.

In addition to the African Civet, several Asiatic species closely related to it contribute their perfume in captivity, and have very similar wild habits. The Large Indian Civet (*Viverra zibetha*) is well known in Bengal as *Bagdas*, and often hunted by "bobbery packs." This has plain grey sides instead of the black-spotted flanks of the African animal, and ranges east to China and the Malay Peninsula. The Tangalung (*V. tangalunga*) inhabits the East Indies from Java to the Philippines, and, like the Burmese Civet (*V. megaspila*), is more spotted than the Indian kind, but not so large.

The Small Indian Civet, or Rasse (*Viverricula indica*) is also kept as a civet-producer, but this is a rather different animal from the typical Civets, being smaller, with no mane along the back, and with shorter claws; in accordance with this structure, it is more of a climber. Its coat is grey spotted with black. It is not only found in India, where it ranges all over the country, and eastwards as far as does the Large species, but also in Madagascar, where, however, it may very likely have been introduced.

THE GENETS

The Genets and Linsangs (*Genetta*, *Prionodon*, *Poiana*) are very beautiful animals, of small size, with very short legs and long bodies, necks, and tails. In their sleek spotted coats and retractile claws, they much resemble the true Cats, but

have the characteristic foxy head of the Civets. They are good climbers, and feed on birds and the like. They are found in the warmer parts of the world, the Linsangs, with the exception of one African species, being Asiatic, while the Genets are chiefly African. The Common Genet (*Genetta vulgaris*) is grey with black spots, and rather smaller than a Cat. It is found not only over Africa from north to south, but in South-western Asia, and also, unlike most of the Civet family, in Europe, where it inhabits Spain and even Southern France. It is sometimes tamed, and kept to destroy Rats and Mice, but, though it has no scent-pouch and does not smell unpleasant, exhales sufficient odour to make it rather a highly-flavoured house-pet. It is usually on view in our Zoological Gardens.

THE TREE-CIVETS

The Tree-Civets, like the Genets, are long-bodied, short-legged animals, with foxy heads and retractile claws; but they are heavier-bodied and larger than the Genets, equalling or exceeding a Cat in size, and their long tails are slightly prehensile. Their coat is often self-coloured or nearly so; they are essentially climbing animals, spending most of their time in trees, and feed a great deal on fruit as well as on small animals. The common Tree-Civet or Toddy-Cat (*Paradoxurus niger*), which is grey variegated with black, is a very well known animal in India; though, owing to its nocturnal habits, it is seldom seen. The stuffy musky smell it diffuses, however, often betrays it; and I have sometimes seen it in the evening or at night quite among the houses in Calcutta—indeed, I caught two individuals in a big box-trap in my own pantry, which they had been attempting to raid, producing a terrible din by trying to get the bread out of a tin box. So skilful a climber is this creature, that I have seen it swarm up a water-pipe in the angle of a wall—a climb which I fancy an ordinary Cat would have had some difficulty in negotiating. The Paradoxures found in Bengal are often intermediate between this species and the Malayan one (*P. hermaphroditus*), which is usually greyer and more spotted. The Toddy-Cat—so called from its habit of drinking the toddy or juice of the palm from the vessels hung to collect it—is constantly on view at the London Zoological Gardens, and at the time of writing there is a curious pied specimen there. The Tree-Civets are an Asiatic group, except the West African *Nandinia binotata*.

THE BINTURONG

(*Arctictis binturong*)

THIS curious animal is sometimes called the Bear-Cat, a peculiarly unhappy name for a creature which is neither Cat nor Bear, though with its short, free, lynx-like tufted ears, and long, coarse, grizzly black coat, it does suggest a combination of Bear and Cat. It is, however, practically a large Paradoxure; in size it may equal a large Terrier, and it is remarkable for having a very long tail which is truly prehensile, being the only non-marsupial animal in the Old World endowed with this means of suspending itself. It is an omnivorous, nocturnal, forest animal, found from Assam to Java, and is not unfamiliar in captivity, though it cannot be called common.

THE WATER-CIVET

(*Cynogale bennettii*)

ALTHOUGH one or two of the Mongooses—the group next to be noticed—are more or less aquatic, the present animal is the only member of the Civet family specially adapted for an aquatic life. This otter-like Civet is about as big as a large Cat, short-tailed, short-eared, and broad-muzzled, with abundant whiskers. It is web-footed and a good swimmer, but also able to climb. In colour this animal is a grizzly brown; it is very omnivorous, devouring anything, from fish to fruit. The Water-Civet ranges from Borneo to Sumatra; it is a rare animal, and I have only once heard of it being kept in a Zoological Garden. In this case the specimen was exhibited in that of Calcutta, where I had a chance of studying it myself.

THE FOSSA

(*Cryptoprocta ferox*)

THE Fossa of Madagascar is a very curious creature, forming a connecting link between the Civets and Cats, though ranged by most naturalists with the former. It is nearly as big as a small Leopard, long in body and tail, with retractile claws and the brown fur of a Puma, and the teeth of a true Cat in a Civet's long muzzle. It is a great climber, very savage and extremely active, and credited with being dangerous to men, while it at any rate attacks Goats. It has once been exhibited at the Zoological Gardens in London, but is a rare animal, and little known even in its own country.

INDIAN GREY MONGOOSE
By Louis Sargent

THE GREY INDIAN MONGOOSE

(*Herpestes griseus*)

THIS, the commonest in captivity of the little animals known as Mongooses or Ichneumons, is a very fair type of the group, which forms a well-defined section of the Civet family. It is not a large animal, being about half the size of a Cat, and its grizzly-grey fur is loose and coarse in texture. There are five toes on each foot, and these are armed with strong claws suited for digging, and not at all like the more or less cat-like claws of some of the Civets. The coat varies somewhat in colour locally, specimens from the district of Sind being rusty-red in colour instead of grey.

This is a very widely spread animal in India, and is confined, in the natural state, to that country and Ceylon, though it has been introduced far and wide abroad owing to its reputation as a vermin-killer, and has thus gained a footing in the Malay Peninsula, the West Indies—especially Jamaica—and Hawaii.

Unlike so many small animals, and carnivora especially, the Mongoose hunts by day, and so is often seen and very well known; it does not at all shun human habitations, and comes into suburban gardens and even about houses, which it has been known to enter voluntarily and, on encouragement, to make itself at home. It is generally a ground animal, sheltering in holes, but can climb on occasion. In its diet it is particularly omnivorous, feeding on almost any animal which its great courage and activity enable it to master, and also eating various kinds of fruit. Birds, beasts, reptiles, and insects contribute to its fare, and it is doubtful whether it does more good by destroying Rats, Snakes, and such-like vermin, or harm by its raids on poultry and its destruction of birds and eggs generally, and harmless and useful reptiles such as lizards. It is well known to be able to kill and devour even large poisonous snakes, such as the Cobra, though it probably does not risk

an encounter with such dangerous quarry if easier game is available. In its fights with such foes, it relies on its extreme activity to escape their fangs, and, as it bristles up its long wiry coat when attacking, and has a tough thick skin, they have the less chance of making an impression on it.

If fairly bitten, however, the Mongoose succumbs ultimately just as any other animal would do, though it seems to have some power of resistance to the poison. The idea that it seeks an antidote in some (unknown) herb is of course erroneous.

The voice of the Mongoose is a sharp yapping bark or yelp, but when irritated, as when disturbed while feeding, it utters a growl remarkably loud for so small an animal. The young of the Mongoose are produced three or four at a time, and lodged in a burrow, which may be dug by the animal itself.

This animal is readily tamed when taken young, and becomes a very affectionate as well as interesting and intelligent pet, though it is of course a dangerous companion for other animals. One specimen kept by Sterndale, which was devoted to its master and would perform many amusing tricks, killed a tame cock Bustard (*Eupodotis edwardsi*), a bird as large as a big Turkey-cock, and even attacked a Greyhound.

The results of the introduction abroad of this animal is often cited as an example of the harm done by upsetting the balance of nature—though it must be remembered that this may be done in other ways than by introducing a new wild creature into a country, the mere settlement of any region by man producing a greater disturbance of conditions than anything else could effect. The Mongoose was introduced into Jamaica to kill down the sugar-cane Rats, and did so to such purpose that in only ten years from the original introduction of nine specimens, it was estimated to be saving the colony £100,000 to £150,000 annually.

After this, however, it became too numerous, finding, probably, too few natural enemies; for in its native country, what with Pythons, the great Monitor Lizards, the numerous birds of prey, Wild Cats, Jackals, and other carnivorous creatures stronger than itself, there are plenty

of destructive agencies. This being so, the Mongoose was found to be destroying not only the Rats, but all the ground-birds, the local harmless snakes, and the lizards, while it extended its depredations from poultry even to kids and calves, and showed its vegetarian tastes by devouring fruit and even the sugar-cane it had been introduced to guard. The havoc wrought upon the birds and lizards resulted in a great multiplication of the ticks, which had been kept down by these creatures, and in the end the Mongoose was voted a worse evil than the Rats had been. After this, however, the Mongoose itself began to decline in numbers, one cause suggested for this being that it was much worried by the ticks it had contributed to encourage, and its great influence for good or ill is now considered to be over, the balance of nature having become readjusted. The state of affairs in Hawaii seems to have been somewhat similar.

It is easy to see that the unfortunate result could have been avoided if the Mongooses had been thinned down as soon as they were seen to be exceeding their instructions, so to speak; but the lesson has produced a deep effect, and the neighbouring American Government has taken it so much to heart that it does not allow living Mongooses to be landed at any port under its control. The fact is that, if an alien pest-exterminator is needed, birds are far better than beasts, as, if they get too numerous, they are much more easily kept under control, as every gamekeeper knows.

THE EGYPTIAN MONGOOSE

(*Herpestes ichneumon*)

THIS is the celebrated Ichneumon of the ancients; it is very similar to the Indian species, but twice as large, and distinguished by having a tassel or bunch of black hairs at the end of the tail. This animal is the only Mongoose found in Europe, where it inhabits the south of Spain; it is spread over North Africa generally, and is replaced in the south by a very similar species (*H. caffer*). In general habits it

resembles the Indian Mongoose, and was the species which gained so much reputation by destroying the eggs of the Crocodile, as well as by its combats with snakes.

The typical Mongooses number about a score of species, found in various parts of Africa and Asia, and there are a number of little animals more or less closely allied to them, which cannot be particularised here, with one exception.

THE MEERKAT

(*Suricata tetradactyla*)

THE Meerkat is sometimes known as the Suricate, but the above is its name in its own country, South Africa, where it is a very familiar animal. In size, it resembles a half-grown kitten; its coat is close, and banded with black and brown, and its tail covered with particularly short hair, chestnut at the root and black at the tip, so that it is very different from the brush of the Mongoose. The eyes also differ much, being large and dark, while the ears are very short and the head round, with a pointed snout. There are only four toes on each foot.

The Meerkat is a burrowing animal, living in colonies, and in many ways resembles the Prairie Marmot (*Cynomys ludovicianus*) of North America, which is interesting, seeing that the latter is a rodent and the former a carnivore. The Meerkat, however, is far less carnivorous than the Mongooses, feeding largely on bulbous roots, which it scratches up, and, though readily feeding on little animals, not attacking large prey. It is thus a more convenient pet, and is often kept in that capacity, both in Africa and here; it has produced young in captivity.

This animal is remarkably fond of the sun, and basks in a peculiar manner, sitting up like a Dog begging. It also frequently stands quite up on its toes, being much more inclined to assume an erect position than most quadrupeds, though the Mongoose does this also to a small extent.

STRIPED HYÆNA
By Winifred Austen

THE STRIPED HYÆNA

(*Hyæna striata*)

BEING a widely diffused animal, ranging throughout North Africa and east through India, the Striped Hyæna is the most generally known of the small family of carnivores which it represents. There are only three kinds of Hyænas, all confined to the Old World, and there is a strong family resemblance between them.

Our illustration well shows the somewhat dog-like form—with, however, a strong slope in the back not seen in any Dog; but Hyænas differ from all Dogs in having only four toes on all the feet, whereas in Dogs there are always five on the fore-foot, except in the curious Hunting-Dog of Africa. This, however, although somewhat Hyæna-like in other respects also, is not to be mistaken for any Hyæna.

Hyænas do not differ much in size, the present species being about as large as a Mastiff. Their teeth are extraordinarily powerful; it is stated that they can snap the shin-bone of a Horse or Bullock in a single effort.

Indeed, they feed largely on bones, coming to a carcase after more powerful creatures have left it. The Striped Hyæna is, in fact, a pitiably cowardly creature, and seldom attacks living prey if it can get carrion, though it will occasionally carry off Goats and Dogs. It is nocturnal in its habits, retreating to some cave or other similar hiding-place during the day.

Sportsmen generally look upon this animal as mere vermin, and do not molest it unless it makes a nuisance of itself by petty larceny about a camp; but it is occasionally, in India, ridden at and speared, as is done with more worthy quarry. When thus pursued, it is apt to give a long run, for, although not a very fast animal, it jinks or dodges to avoid the spear very adroitly.

It has long been contended by hunting men that Horses like the

sport, and a good proof of this was once furnished by an old Arab Horse, who happened to lose his rider during a chase after a Hyæna. He took up the pursuit on his own account, and got near enough to attempt to bite the beast and strike it with his forefoot, the miserable Hyæna only responding by tucking his tail between his legs.

The cry of this Hyæna is loud and peculiar, and native tradition asserts that it beguiles Dogs away by its vocalisations in order to devour them.

The cubs are said to be three or four in number, but little is known about the breeding habits of this otherwise familiar beast.

In captivity the Striped Hyæna, like all Hyænas, does well; it is the commonest kind seen in menageries, but does not often breed there —at any rate it has seldom done so in the London Zoological Gardens. The idea that these animals are untameable is a mistake; they do not appear to be worse to manage than any other carnivora.

THE BROWN HYÆNA

(*Hyæna brunnea*)

In the Striped Hyæna a noteworthy point is the mane of long dark hair running down the back; in the present species this long hair is continued over the sides, and the body of the animal is self-coloured. In other respects, however, the Brown Hyæna is very much like the Striped species, and its legs are short-haired and marked with stripes in a similar manner.

The Brown Hyæna was the characteristic species of South Africa— I say "was," for it is now a very scarce animal, and is believed to be approaching extinction. It was known to the early settlers as a sea-shore beast, whence it received the name of Strandwolf. True Wolves, by the way, are not found south of the Sahara, and any references to them in South Africa really concern Hyænas. Later on it was found that the Strandwolf also occurred inland, and in the early days of South African colonisation it seems to have been a ferocious and dangerous

animal, attacking even man at times. The beast concerned in the often-told story of the drunken trumpeter, who was effectually sobered by finding himself being carried off by a Hyæna, was one of the present species.

The Brown Hyæna is naturally much less commonly seen in captivity than the other kinds; but it has several times been exhibited in our Gardens, and there is a specimen there at the time of writing.

THE SPOTTED HYÆNA

(*Hyæna crocuta*)

This is the typical Hyæna of Africa generally, though not occurring north of the Sahara, where the Striped species is the only one found; in Somaliland, however, they meet. The Spotted Hyæna is decidedly larger and more powerful than either of the others; it may reach a length of over six feet from the nose to the tip of the tail.

Its coat is short and close, and there is no mane on the back; the colour is clear, marked with large black spots.

The traditional laugh of the Hyæna is one of the characteristic notes of this species, which has a rather extended vocabulary; but the horrid cackle of "laughter" is commonly heard about a carcase, and seems to be the expression of annoyance in the animal. Ancient tradition credited the Hyæna with laughing to beguile its victims, and, although on the whole a cowardly brute, there is no doubt that this species is the most ferocious and dangerous of the three, nowadays at all events.

Although its usual food is carrion, it frequently attacks domestic animals, and even sleeping or wounded people, having a horrid custom of snatching a mouthful from some convenient part of its victim, and then making off. Thus, the tails of domestic animals and the udders of cows are torn away by it, and human beings have to dread having the cheeks torn out, or a similar attack made on other fleshy parts of the body.

In the ordinary way the beast is nocturnal, but it must sometimes

hunt for food by day, as it is recorded to be in the habit of discovering carrion by watching and following the flight of its fellow scavengers the Vultures, which are strictly diurnal birds. It shamelessly poaches on the "kill" of the Lion, and sometimes pays with its life for its audacity, if the outraged monarch takes it by surprise.

When I was in East Africa in 1892, the laugh of the beast might then be heard quite close to bungalows on the little island of Mombasa, then mostly covered with bush, and even harbouring Lions occasionally.

In captivity this Hyæna seems rather more tameable than the striped species; owing to its laughing note it is a popular exhibit, and it has bred both on the Continent and in our Zoological Gardens.

THE AARD-WOLF

(*Proteles cristatus*)

THE curious South-African animal known by this name and sometimes as "Maanhaar Jackal" (Maned Jackal) is a near ally of the Hyænas, though usually placed in a separate family (*Proteleidæ*). In general appearance it is like an under-sized striped Hyæna, but is bigger than a Fox, and has a narrow muzzle and a rather long bushy tail. Its grinding teeth are very unlike the great bone-crushers of the Hyænas, being remarkably small, weak, and set far apart. Its food is chiefly insects and carrion, but of late years it has developed the habit of attacking lambs, and is hence in great disfavour with Cape farmers. Like Hyænas, it lives in burrows or dens underground. One very curious point it has in common with the Hyænas is its habit of going down on its fore-knees when fighting, Hyænas doing this with a view to saving their paws from the terrible teeth of their assailant.

In internal characters the Aard-Wolf somewhat approaches the Civets, and forms a link between them and the Hyænas proper; it is interesting to note that some of the oldest naturalists described the common scent-producing Civet as the "Odoriferous Hyæna." The Aard-Wolf bears captivity well, and, although not common in that condition, has several times been exhibited at our Zoological Gardens.

WOLVES
By Winifred Austen

THE WOLF

(*Canis lupus*)

THIS typical member of the Dog tribe—so nearly related to our tame Dogs that some naturalists consider it their ancestor, is a very widely ranging beast, being found all round the Northern Hemisphere, though it presents a great deal of local as well as individual variation in size, coat, and strength of teeth.

The Wolves in the illustration, sketched from a very fine Siberian animal in the London Zoological Gardens at the time, are redder in tint than many specimens, the more ordinary hue of a Wolf being a sort of washed-out dun or yellowish-grey. Some black "ticking" on the upper parts is always present, and entirely black Wolves occur in widely separated localities. White ones may also be found, and the Wolf of the high Arctic regions forms a white race.

As with so many other widely ranging animals, the Wolf attains a finer development in cold than in hot climates; it is natural that he should wear a thicker coat in the former, but his actual size is also greater. The largest Wolves seem to be those of Alaska; a huge black specimen exhibited in the British Museum is bigger than any Dog.

In the plains of India, on the other hand, the Wolf is a poor weedy degenerate brute, about six inches shorter in length than the typical Wolf, and with a close coat devoid of the usual woolly under-fur found in Wolves. It is, indeed, usually ranked as a distinct species (*Canis pallipes*), but all its peculiarities seem obviously due to what may be called tropical degeneration.

The ordinary length of a dog Wolf is about three and a half feet from muzzle to root of tail, the bitch being somewhat smaller. The Wolf is thus larger than most of our tame Dogs, and he is, indeed, the largest of the members of the Dog family found wild.

As he has been for ages the traditional enemy of man and his domestic

animals, the habits of the Wolf are well known. He is generally a nocturnal animal, frequenting forests and overgrown localities generally, wherever such exists, and usually hunts singly or in pairs, except when, under stress of necessity, several, or even a large number, unite to overcome a powerful victim.

Essentially a cowardly animal, the beast usually prefers to attack prey which is easily overcome, but he is well armed for combat, inflicting a terrible snatching bite, while his speed and endurance in pursuit of prey or escape from enemies are well known. It is very rare, indeed, for a Wolf to be fairly ridden down.

The Wolf will readily feed on carrion when he finds it conveniently accessible, and he preys not only on Hares, Deer, and such like wild creatures, and on domestic cattle and poultry, but on his fellow-carnivores. The Fox is a frequent victim, and the tame Dog, in spite of such nearness of relationship that the two species sometimes voluntarily cross, is greedily sought for as prey. Indeed, the Wolf is not at all averse to cannibalism when pinched by hunger, as many stories of wolf-hunted sledge-parties testify—the devouring by their companions of Wolves that have been shot being a common incident.

In spite of his cowardice, the Wolf appears to be a more inveterate man-eater than any other animal; for ages he has been celebrated as the worst foe of children, and many are destroyed by him even at the present day in India, while, when pressed by the rage of hunger in winter, packs will, as is well known, attack adults. Never a severe winter passes without lamentable reports in our newspapers of the death of human beings on the Continent at the jaws of these brutes, which in such seasons press westward from their fastnesses in the forests of Eastern Europe, especially Russia. They linger, however, almost all over the Continent, and were not completely exterminated in Britain till a comparatively recent date. In England, it is true, it is supposed to have become extinct in the reign of Henry VII.; but in Scotland they amounted to a serious plague in the time of the unhappy Queen Mary, and did not become extinct till the end of the seventeenth century at all events. In Ireland they appear to have lingered till perhaps a century later, but in all these cases the exact

date of their final extinction is unknown. The lateness of this, however, even in an insular area like ours, gives an idea of the difficulty of keeping down the pest on the Continent; yet, in North America, the Wolf disappears before civilisation far more quickly. It is curious, also, that he is not nearly so dangerous to man as in the Old World, though equal to his relatives there in size and power. In America, by the way, this species is generally distinguished as the "Timber" Wolf, to distinguish it from the "Prairie Wolf" or Coyote, to be noticed later.

The she-wolf brings forth in spring, and deposits her litter in a thicket, or an earth dug out by herself or appropriated from some other animal; the whelps number usually about half-a-dozen, and are suckled about six weeks. After this the female gives them meat disgorged from her stomach, and brings them some unfortunate little creature to kill. Her mate takes no interest in the litter, except that he will devour them if he has the chance. Although adult at the age of a year, a Wolf does not attain its full development till twice that age, and lives to about fifteen.

The note of the Wolf is the well-known howl; in the wild state it does not bark, but may learn to do so in captivity, from hearing tame Dogs. It lives well in confinement, and breeds freely; it will also in this condition—and even when wild, as noted above—cross with Dogs. Wolves brought up from early youth have been known to display all the affection and fidelity of Dogs; but they have serious faults from the point of view of a lover of pets. They are very nervous animals, and are seldom to be trusted with children.

Considering the close relationship of the Wolf with the Dog, it is curious that their normal attitude to each other is one of ferocious animosity; but very probably this is due to the proverbial aversion often existing between relations. Domestic Dogs, at any rate, hate as well as fear the Wolf, and Wolf-hounds are among the best agents to use in exterminating it. They are, however, usually afraid of the quarry, for a Wolf is almost invariably more than a match for a Dog of the same size, owing to his tougher skin and more powerful teeth, as well as to his better training.

It is thus a good deal easier to run a Wolf with swift hounds till he turns to bay, than to get the hounds to tackle and worry him. Strychnine has been found an excellent means of exterminating Wolves, but the use of poison has the objection that Dogs as well are likely to suffer. The only use of the Wolf when taken is to provide a very warm and serviceable fur for rugs, coats, &c.

The Wolf is subject to hydrophobia, and much dreadful havoc has been, and still is, occasionally wrought by rabid Wolves.

THE COYOTE

(*Canis latrans*)

THE Coyote is a purely American animal, haunting the prairie districts of the north of that continent. In colour it is quite similar to many Wolves, being reddish grey with black ticking, but it is a smaller beast than a true Wolf, with a narrower muzzle and fuller brush, thus showing a distinct approach to the Fox type. The coat generally is very full.

The Coyote is a timid, skulking creature, full of cunning, and a dire foe not only to small and weak wild animals, but to sheep, poultry, and the like, but it does not attack man. It is, indeed, inclined to hang about his vicinity in the hope of what it can find or steal. It barks a great deal, and in nocturnal howling it is particularly proficient, like the Jackals of the East, which it much resembles in ways and character; and, like the Jackal of India, it can put up with fruit as food when its more natural animal diet is not conveniently available. It does well in captivity, but is not nearly so common in menageries as the Wolf.

BLACK-BACKED JACKALS
By Winifred Austen

THE BLACK-BACKED JACKAL

(*Canis mesomelas*)

THE beautiful Black-backed Jackal of South Africa is the handsomest and most distinct of the group of wild canines known as Jackals, which, although presenting some points of resemblance to Foxes, come closer to the Wolves. Indeed, as far as size goes, there is little to choose between the large dull-coloured Jackal of Egypt (*Canis anthus*) and the under-sized Wolf of the Indian Peninsula.

The Black-backed Jackal is rather larger than the average Fox, which size is characteristic of Jackals in general. Its tail is, however, longer than those of Jackals usually are, but it does not form as full a brush as Foxes' tails do. By the name of "Fox" it is commonly known near Cape-Town, where it has been regularly hunted for many years, in the orthodox way—with Fox-hounds. It has also been so hunted in Bechuanaland, but for the most part it is simply regarded as vermin, and has a reward of 7s. 6d. set on its tail, for it is a serious pest to the flocks of the Cape farmers. Like Jackals generally, however, it is a terrible coward, and seldom summons up enough pluck to tackle a full-sized Sheep. It feeds readily on carrion, and also kills Hares, while, as might be expected, it is destructive to poultry. Nothing, indeed, comes amiss to it in the way of meat; even a Water-tortoise has been found in the stomach of one.

At times several may be seen together in the evening as depicted in the illustration; but as a general rule the animal cannot be called social, even the parents not living in the earth along with their cubs, but lying out in any adjacent cover. They are, however, attentive to their young, the male as well as the female helping to provide for the family, which usually numbers about half-a-dozen. It has been noticed that the burrow, which the animals prefer to find ready-made, has almost always a "back-door" to allow the young to escape in case of need.

The note of this Jackal is a wailing laugh "Wa-ah wah, wah, wah"; it also utters a cackling sound when attacked. Besides being the familiar species in South Africa, it ranges north up to Abyssinia. It is not uncommon in captivity; many specimens have been exhibited in the London Zoological Gardens, where some have been bred. A number are at the time of writing thriving in a small outdoor enclosure with an earth-covered mound provided with burrows, and bear the cold as well as the common Foxes similarly housed alongside.

THE INDIAN JACKAL

(*Canis aureus*)

THIS is the best known of the Jackals, but it is a far less handsome creature than the Black-backed, being less slender and elegant in form, with a much shorter brush. Its colour also is simply brown, grizzled with black above.

In India this is a most familiar creature, hanging about the habitations of man, in hope of picking up any garbage it can find, or making prey of some kid or fowl left unsecured in the evening. It is found even in populous towns, taking refuge during the day in the drains; I have had one bolted from such a retreat under my front doorway in Calcutta. At night it goes forth on its rounds, emitting at times an abominable howl, which is calculated to rouse one from the soundest sleep. The cry is commonly rendered as "Dead Hindoo! where, where? where, where?" and I can vouch for the accuracy of the last syllables, at all events; the first crash of discord is what wakes one up!

It is said that not only dead Hindoos, but their live babies, may fall victims to this stealthy cowardly brute: and he is a real danger owing to the fact that he contracts, and of course communicates, hydrophobia. His chief use is to provide sport for the Anglo-Indian hunting community, the "Jack" taking the same place among them as the Fox does in England. A tame Jackal I saw in India had all the

actions of a Dog, and some would claim that our Dogs are descended from Jackals. How this may have come about was shown me by an anecdote told me by the late Mr. W. Rutledge, our leading animal-dealer in Calcutta and a keen practical naturalist. He had discovered the presence of a miserable mangy Jackal in a drain about his house, and kindly threw it some food at times. The creature's health improved with better meals, and it took to entering the verandah, and would at last lie down on a couch there, and, when approached, look up and wag its tail as if asking not to be disturbed—in fact, it fairly domesticated itself.

THE DINGO

(*Canis dingo*)

WHATEVER the Dog may have started from, however, there is no doubt that the Dingo of Australia is a Dog at present; it closely resembles the pariah or street dogs of the East, and I have seen, in Calcutta, a cross between one of these and a Chinese "Chow" Dog, which any naturalist would have called a Dingo at once.

The Dingo is a medium-sized animal, about as big as a Fox-hound, but lower on the legs; it has prick ears and a narrow muzzle, and the tail is bushy. There is, however, a less foxy appearance about it than is noticeable in the Wolf or in a large Jackal. The coat is tan, with more or less black ticking on the back; but there is much variety in colour, especially nowadays, when Dingos so often cross with strayed tame Dogs.

Dingos usually hunt in pairs; they are very cunning, and exceedingly destructive to sheep, calves, and poultry. Their natural wild prey is Kangaroos, when they can get them, and ordinarily Rats and such small fry.

They are often domesticated by the Australian blacks, but are not very docile, and often leave their masters, although kindly treated. As most of the Australian beasts are, as is well known, of the marsupial or pouched order, zoologists find a difficulty in believing that the Dingo

got there naturally, and not by the aid of man. Be that as it may, his fossil remains are found in Australia along with those of extinct animals, so that if he were artificially introduced, it must have been by some very ancient race. As I have elsewhere suggested, it is quite possible that away from Australia the true Dog does not occur wild at all, but is represented by the pariahs of the towns, which have domesticated themselves to a certain extent of their own free will, the case being similar to that of the common Mouse—and, it may be added, to that of the Sparrow. This hypothesis would not, of course, exclude a descent in some cases from the Wolf, or one or more of the Jackals, and probably there has been much crossing. In any case, the original Dog was a poor, skulking brute, and owes all his fine qualities to our selection of the best individuals from our point of view; the Dingo is an unmitigated pest, and is kept down in Australia by all possible means.

THE MANED WOLF

(*Canis jubatus*)

THE Dog family is widely distributed over the world, but, with the exception of the Wolf, the species of America are different from those of the Old World. Of the South American kinds the most remarkable is the Maned Wolf or *Aguará-guazu*, the latter name meaning "large fox."

This beast almost equals the true Wolf in size, but is otherwise very different; in form it is light and high on the legs, and is a far less powerful animal. Its colour is bright chestnut, with some black on the muzzle and front of the legs, and the inside of the ears white. This coloration is, by the way, repeated in a South American Deer (*Cariacus paludosus*), which would, by some naturalists, be supposed to have acquired its hue by natural selection in mimicry of the canine. The Aguará-guazu is a solitary nocturnal animal, and a good runner and swimmer. It seems not to attack large prey, though domestic animals are sometimes frightened by its mournful cry of "Goo-ah." It is rare in captivity, but has been exhibited at the London Zoological Gardens.

VIXEN AND CUBS
By Winifred Austen

THE FOX

(*Canis vulpes*)

Our familiar beast of chase can boast of a very extended range over the world, for he is found not only throughout Europe, but all along Northern Asia, including the Himalayas, while the Red Fox of North America (*Canis vulpes fulvus*) is simply a local race. Foxes vary a great deal in colour, both locally and individually, the typical red not being always equally intense, and sometimes absent. Our Highland Foxes are greyer, besides being larger, than the Lowland Fox, and in the Himalayas the Fox's colour is a sort of mixture of grey and yellow. In Southern Europe is found a variety of the Fox in which the under-parts are sooty-black instead of white, and the white "tag" at the end of the brush is often absent here.

What are called "Cross Foxes" in America have a dark shading along the back and a dark bar crossing this over the shoulders; while the much-prized "Silver Fox" is a black variety ticked with white hairs. The great value of this skin is due to this casual occurrence of the colour, and any one who could catch alive Silver Foxes, isolate them, and raise a breed, would make his fortune.

Both black and white Foxes have occurred in England, and in one locality there is a superstition that if one of the former colour is run by the hounds there will be some accident during that run to one of the followers of the hunt. As the Fox has been so much and so long hunted, his life-history is a matter of common knowledge with many people. He preys, as all know, on any small creature he can overpower, and is the traditional foe of poultry; he is adroit enough to make the Hedgehog unroll and yield himself a victim, and is really very useful by the number of Rats and Field-Mice which he destroys. Rabbits form a large and important part of his food, and he also feeds upon Hares when he can catch them. His usual method is to stalk his prey, but he has many ruses, and has been seen to capture so wary and quick a bird as the Wood-

pigeon by walking right among the flock with an elaborate affectation of indifference.

Lambs sometimes fall victims to the Fox in our mountain districts; and in such places, where he cannot be hunted in the orthodox way, he is shot down like any other destructive animal in consequence. Carrion is always acceptable to Reynard, and, though he is not known to eat fruit in England, he does so on the Continent, and after revelling for some time on the traditional grapes and other soft fruit, he becomes fat and loses his rank smell to some extent.

Whatever is left from his meals the Fox carefully hides, like the Dog tribe generally; this is some excuse for the apparently wanton destruction he wreaks in a hen-house, in which he will kill all the inmates. No doubt he intends in such a case to take away all the fowls and bury them, in order to live in luxurious idleness for some time.

Although he will often "lie out," especially in hot weather, the Fox's proper home is in his earth, which he does not dig for himself if he can possibly appropriate another animal's home. The Rabbit's, of course, needs enlarging, but the Badger's suits him exactly, and is often used. In the earth the vixen has her cubs, which are at first very different from old Foxes, being of a sooty colour throughout. They are playful and amusing little things, and make interesting pets, though naturally it is difficult to get them to let poultry alone. The vixen is a very fond mother, and spares no trouble in feeding and educating them. Except during their family life, Foxes are solitary animals, and usually quiet; their note is a yapping bark.

One of the most interesting habits of the Fox is his custom of sparing Rabbits or fowls which live near his den. In the case of poultry it is easy enough to see that it is obviously to his interest to do this, if he wishes to live in peace with his human neighbours; but it is noticed that his family, when they begin to forage for themselves, are not so forbearing, and the habit may have reference to the obvious need of having a confiding population of fur and feather for the cubs to practise hunting upon.

The Fox is, of course, not a popular individual with other animals—

birds especially; the Magpie, who has a very similar character himself, takes particular pleasure in mobbing him and betraying his movements. Among serious foes he has, out of Britain, to reckon the Wolf and the Lynx, while he may occasionally fall a prey to the Eagle, which grips him by the haunches with one foot, while muzzling him with the other. Man, except in England, is his most deadly foe, but the little beast's cunning and resource render him a difficult animal to exterminate, and he survives long even in cultivated and civilised countries.

THE ARCTIC FOX

(*Canis lagopus*)

Foxes as a group are very widely distributed and numerous in species, but of the foreign ones the Arctic animal is the best known and one of the most remarkable in several ways. It is smaller than our Fox, with shorter muzzle and ears, and altogether less elegant form. Its coat is either dark-coloured—greyish or brownish slaty—or white, often varying according to season. Not all individuals, however, are dark in summer and white in winter, even in the same localities; some are always dark, and some always white. Of two individuals in the London Zoological Gardens at the time of writing, one is merely brownish in summer and bluish-slate in winter, while the other is dark with white under-parts and extremities in summer, and all white in the winter. The grey winter skins are the valuable Blue Fox fur, and in the Prybiloff Islands, where the Fur-seals breed, American enterprise is attempting to fix this blue strain. Not only are the Foxes fed in winter with seal-meat, but they are selected when captured for fur. Some of the best blues are set free again, while all white ones are killed off.

Inhabiting as it does the high northern regions of the world, this Fox has for long been a puzzle to naturalists, who could not understand how it lived in winter. It has been found, however, that it practises "cold-storage" in the short summer season of plenty, hiding away the eggs of sea-fowl and doubtless the birds themselves, as well

as quantities of the queer little short-tailed mice called Lemmings, which are preserved by the frozen subsoil. The Fox also follows the Polar Bear in the hope of dining off his leavings, and now and then gets a welcome windfall in the shape of unfortunate Razor-bills (*Alca torda*). These diving-birds, wintering in the high north, often fall exhausted on the ice when they cannot discover open water after long flights, and the Fox naturally does not waste such an opportunity of adding to the larder.

He himself is regarded as a welcome addition to the commissariat of our Arctic explorers, and is eaten with relish whenever he can be obtained.

THE FENNEC

(*Canis cerdo*)

This is a beautiful little Fox inhabiting the deserts of North Africa. It is very small, only about as large as a Cat, and thus the smallest of the Dog family. The ears are, however, very large, being big enough for an ordinary Fox. The coat is of a pale sandy, almost cream colour, and the eyes dark. The Fennec feeds mostly on small creatures like the Jerboas, which share its dry and lonely home, and, like them, hides in burrows during the day. It is also very fond of fruit.

As might be expected, this pretty miniature Fox makes a charming pet, but unfortunately it is not very common in captivity.

DHOLES
By Winifred Austen

THE DHOLE

(*Cyon dukhunensis*)

THE Dhole, or Red Wild Dog, of India, was not a very familiar animal by reputation until the publication of Mr. Kipling's "Jungle-Book," and, although sportsmen in India knew of it as one of the worst enemies of game, it is not abundant even there. Yet it has a wide range, from Eastern Tibet almost all over India, usually in forest country. East of India it is replaced by the allied race—it is hardly a species—the Malay Dhole (*C. rutilans*).

In Siberia there is another Dhole, the only other species known (*C. alpinus*), which chiefly differs from the Indian animal in its much lighter colour and fuller coat, the latter being particularly noticeable on the tail, which is in winter a splendid brush.

Dholes differ from Dogs, Wolves, and Foxes in having fewer teeth, two molars in the lower jaw being missing; the teats of the female are also more numerous, and there is long hair between the foot-pads. This disposes of any possibility of tame dogs being descended from them, and so the term "Dhole" is preferable to that of "Wild Dog."

Wild enough they are in one sense; the Indian Dhole, whose habits are the best known, is a wandering creature, travelling in packs of a dozen or less, which soon clear out the game in a jungle by the terror they inspire, and so constantly have to shift their own quarters. Their quarry is usually Deer, Nilghai, and so forth; but almost any animal may fall a prey to them, for, although they are not bigger than Collies, and not very fast, they have a deadly persistence in following a trail, and their courage is indomitable when they have run down their prey, which they will bait until it or they perish in the fight. Even that magnificent wild Ox, the Gaur (*Bos gaurus*), which even the Tiger generally lets alone, has fallen a victim to them, and they have been

seen slowly worrying to death a Himalayan Bear (*Ursus torquatus*), though poor Bruin, with desperate courage, was defending himself as well as he could, and had killed more than one of them. Even the Tiger himself is believed occasionally to be killed by the red pack, and in any case their operations so terrify his prey that he may be forced to leave the depleted district.

When attacking, it is the custom of the Dholes to snap at the belly and hind-quarters of the victim, and thus disembowel it, some of the pack, when necessary, making feints at it in front to distract its attention. The terrible force of their bite may be judged from a case comparatively recently reported, in which a Sambur stag (*Cervus unicolor*) had been attacked by them when drinking. Taking him at a disadvantage, they had wasted no time in finesse, but had flown at his throat forthwith, and nine inches of his windpipe had been snatched out! Although awkwardly-made animals compared with the Wolf or Fox, or even the Dingo, they spring with great energy, and even in confinement no other canines give such an impression of sheer ravenousness as these do.

They have but little fear of man, but have only once as yet been known to attack him in India. The Siberian Dhole, however, is said to be dreaded by hunters, and if the Indian species also becomes thus dangerous it will be an infinitely worse enemy to the poor natives than the Wolf or even than a man-eating Tiger. There is thus every reason to put a price on the head of the Dhole, a measure which has long been urged by sportsmen, who are naturally disgusted by its depredations on game animals.

Unlike most of the Dog family, Dholes do not appear to eat carrion; but from the behaviour of a captive specimen in India, it has been thought that they eat some vegetable food, as this individual devoured leaves and grass with evident relish, not medicinally, as Dogs do.

Dholes breed in earths which they dig out, and in some cases at all events they form quite a colony. The pups are sooty brown, not red, when very young, like very young Foxes. They are not so tameable as Wolves and Jackals, and are very seldom seen in captivity even in

the East; but at the time of writing this there were some fine specimens in the London Zoological Gardens, though they have since died.

THE HUNTING-DOG

(*Lycaon pictus*)

This African animal is one of the most remarkable of the Dog family, resembling as it does the Hyænas in having four toes on all feet—other dogs having five on the fore-foot—and also in the form and colour of the face and ears. It is, however, a true Dog in all essential points. In size it about equals a Hound, but is remarkably thin and leggy; its coat is close on the body, and the brush short and meagre. The colour is most remarkable, being a sort of mottled tortoiseshell, disposed irregularly in a manner quite unique among wild animals, the two sides, even, of the same animal not matching. There is a little white intermixed, and the end of the brush is always of this colour, while the mask is black. In addition to individual variation in the colours and their arrangement, there is some difference between local races in this respect, but the animal is in any case quite unlike any other beast.

It is widely spread over Africa in open dry country—in the main haunts of game, in fact—and is as deadly a foe to the Antelopes as the Dhole is to Deer in India. It has also the same method of attack, and the same fearlessness of man, which is curious, as it is not more nearly related to the Dhole than to any other canine. The Hunting-Dog, however, runs in much larger packs than Dholes do, and is a remarkably swift animal, rapidly overhauling even large Antelopes by sheer speed. It frequently attacks cattle and sheep, and commits terrible havoc amongst them.

Unlike the Dhole, it is rather given to using its voice; it has a bark of defiance, and a rallying-note, described as beautifully melodious.

Even the Lion is said to fear this animal, and to be scared by an imitation of its cry—a curious parallel to the relations of the Dhole with the Tiger. That it does not spare its fellow-carnivores is shown

by an anecdote recently told by Mr. F. C. Selous, to the effect that a friend of his had known a pack of these brutes to bait a Spotted Hyæna all night—a fact he adduces as showing that Hyænas are not always the cowards they are supposed to be, since this specimen had kept them at bay, and ultimately succeeded in getting off with his life.

Hunting-Dogs breed in colonies, and display much skill in driving their game towards the home of the nursing bitches, so as to kill it conveniently near to them. In short, they seem to know all about hunting that an animal could learn, their tactics being nearly perfect.

They are not common in captivity, but have several times been exhibited in the London Zoological Gardens, and have bred in the Dublin institution.

THE RACCOON-DOG

(*Canis procyonoides*)

As a general rule, the Dog family have a great general resemblance to each other, not presenting so much variation in type even as the Cats, as our illustrations plainly show; but, in addition to the Hyæna-Dog, there is another species which might be mistaken for an animal outside the canine family, although typical in the number of its toes and teeth.

This is the curious little animal known as the Raccoon-Dog, an inhabitant of Amoorland, China, and Japan. It is considerably smaller than the common Fox, and has shorter limbs and tail; its coat is very full, and varies much in colour, being usually a grizzled mixture of black and brown. The eyes are surrounded by a black patch, and this, with the general build and coat of the animal and its habit of humping its back as it walks, gives it a quite remarkable likeness to the American Raccoon (*Procyon lotor*). Like the Raccoon, also, it feeds much on vegetable food.

It is not a swift animal, and does not destroy poultry, the animal part of its diet being the flesh of small animals only, such as Rats and Mice.

SABLES

By Louis A. Sargent

THE SABLE

(*Mustela zibellina*)

OWING to the extravagant value set on its fur, the Sable is the most celebrated of the Weasel tribe—with the exception of the Ermine—but it is very unfamiliar as a living animal. It is not a large beast, measuring about a couple of feet from nose to tail-tip, and with the slim-bodied, short-legged build of Weasels and Martens generally.

Its colour is very variable, and in general the blackest skins are considered the best; a peculiarly rich effect is given by the contrast of the glossy longer hairs with the soft reddish under-fur. Except for the length and quality of the coat, there is little difference between the Sable and the Pine Marten (*Mustela martes*), which ranges over much of Northern Europe and Asia, and even lingers in our islands in the remote mountainous districts of all three kingdoms. Scarcely separable also is the American Sable or Marten (*M. americana*), one of the most valuable fur-animals of North America.

The true Sable's especial home is Eastern Siberia; formerly, at all events, it extended west to the Urals, but relentless persecution has reduced and is still reducing its numbers. The hunt for Sable pelts is full of hardships for the hunters themselves, for the creatures have to be pursued in winter, when the fur is best and thickest, and the cold is of course terrible in the Siberian forests at that season.

The Sable is a great climber, like other Martens, and when pursued by the hunter's Dogs, runs up a tree, whence it is, if possible, shaken or knocked into a net spread round the trunk, the great idea being to capture it with as little injury to the skin as may be. The creature's activity in climbing stands it in good stead in procuring its food, which consists of Squirrels, birds, and such-like defenceless creatures; it will, indeed, prey upon anything it can overcome, and is of a very bloodthirsty disposition. Occasionally, in Kamtschatka at

all events, where the rivers so swarm with fish that fish-dinners are the order of the day with carnivora of all sorts, it will partake of this kind of food; and, in spite of its appetite for blood, it does not disdain vegetable diet, but feeds readily on berries when they are in season.

The Sable makes its den in a hole in a tree, and here is sometimes scented out by the dogs of the hunters; in such a retreat, also, the female deposits her young, which are generally born in April, and number four or five.

The Martens generally display very similar habits to those described, but the Pine Marten in our country has been forced through long-continued persecution to leave its woodland haunts and live chiefly in barren stony places, a habit more natural for the Beech or Stone Marten (*M. foina*), which is a common animal on the Continent.

The Stone Marten has a white breast, whereas in the Pine Marten this is yellow—at any rate, in youth. It has a more southern range than the Pine Marten, but nevertheless ranges into Turkestan, where it shows a much finer coat, approaching the Sable type.

Especial interest attaches to the Stone Marten, on account of its having been domesticated by the ancient Greeks, and kept in the houses to fulfil the duties of our Cats; indeed, the word (*galé*) often translated "Cat," really means this animal, although Herodotus made acquaintance with the real Cat (*ailouros*) in Egypt.

This Marten indeed is inclined to cultivate the society of man, from motives of its own, to inconvenient extent, for it is commonly found near human habitations on the Continent, and is an all-round pest, not only destroying poultry and stealing eggs wholesale, but devouring fruit in the orchards. It is even yet not difficult to tame, and makes a pretty and amusing pet, like other Martens. The Martens generally are northern animals, though one, the Indian Marten (*M. flavigula*), a short-coated but most elegant and richly-coloured animal, is found even as far south as Sumatra, while it ranges in the west to Kashmir.

The most distinct of them, as well as the largest, is the Pekan or Fisher (*M. pennanti*), which is about as big as a Cat, and nearly all

black in colour; from this, and from being shorter in the body and longer in the leg than other Martens, it is often called "Black Cat," or even "Black Fox." It does not really catch fish, though glad to eat them if it finds any lying about.

THE MINK

THERE are, however, real fishing Weasels in the Minks, of which there are two species, the European (*Mustela lutreola*) and the American (*M. vison*), but they are so closely allied that they may be reckoned as one. They are brown in colour, with thick fur and very short ears. The American Mink is the best known, its fur being exported in large quantities, while it is a standing nuisance to poultry-owners, for Minks prey on fish, flesh, and fowl, pursuing their aquatic prey in the water almost as nimbly as the Otter. In America some successful attempts have been made to domesticate Minks, both for their fur and to use them as Ferrets are used. The Mink is about two feet long.

THE POLECAT

(*Mustela putorius*)

THE Polecat is the best known of the Weasels in the living state, when we consider that our tame Ferrets are its descendants, the brown Polecat-Ferret showing the wild colour, while the white ones are albinos. Wild Polecats are, however, very rarely seen in Britain nowadays, for the creature is so abominably destructive to game, rabbits, and poultry that it has been killed out wherever possible. It is found, however, all across the Continent and Siberia. It is a ground-animal, and not nearly so active as the Martens or typical Weasels. Like Weasels and Stoats, Polecats have been introduced into New Zealand to keep down the imported Rabbits, but unfortunately they have not confined their destructive energies to those rodents, but do much harm otherwise.

THE STOAT OR ERMINE

(*Mustela erminea*)

OUR common gamekeeper's pest, the Stoat, is identical with the famous Ermine whose fur trims the robe of royalty, for in cold climates it changes its coat of chestnut above and white below for a pure white all over except for the black tuft at the end of the tail, which is the same all the year round. This change seldom occurs in the south of England, but becomes common as one goes north, till in the north of Scotland it is nearly universal among these animals. Most Ermine fur, however, comes from Siberia, but some from America, for the Stoat is one of the few beasts which range all round the world. In Great Britain it is still common and well known, in spite of the persecution meted out to it by gamekeepers. It is seldom kept in captivity, but has hybridised in that state with the female Ferret, and the hybrids have bred together for two generations.

THE WEASEL

(*Mustela vulgaris*)

THIS tiny, active, long-bodied little creature, the smallest of the carnivora, has, like the Stoat, a wide range all round the world. Like that animal, too, it turns white in winter, but not so readily; thus, this change rarely occurs in our British Weasels. The Weasel is much smaller than the Stoat, though, as the sexes in both species differ much in size, there may not be much to choose between a small female Stoat and a large male Weasel. A safer distinction, therefore—the colours of the two animals being much the same—is the tail, which in the Weasel never has a black tip.

Some confusion may be caused by the fact that what are called Weasels in Ireland are not really of this species at all, but a small local race of the Stoat (*Mustela erminea hibernica*), for neither the real Weasel nor the Polecat are natives of that country. The true Weasel is generally a comparatively harmless animal, its depredations being chiefly on Mice and small birds; indeed, many people reckon it as highly useful.

GLUTTON
By Louis A. Sargent

THE GLUTTON

(*Gulo luscus*)

THE Glutton is an animal of very wide distribution, being found all round the world in the northern forests, and it enjoys quite a number of aliases, of which "Wolverine" and "Carcajou" are the best known.

Although allied to the Weasels, it is, as the illustration shows, much more like a Bear in form, although provided with a fair-sized bushy tail. The claws are very strong and powerful, and the teeth also; the latter bear a strong likeness to the Hyæna's. The coat varies much in colour, some individuals being much darker than that represented; it is long and thick, and well adapted to resist the cold of the sub-arctic regions where the animal lives.

The Glutton is not a very active animal, but his indomitable courage and energy make up for this; he will plod for miles through the frozen forests, and, as he is a climber, sometimes lies in wait for his prey in a tree. He spares no creature that he can overpower, and his strength is such that even such large animals as the Reindeer fall victims to him; on this creature he is said to pounce from above.

His appetite is large, though he is somewhat belied by the extravagant fables which used to be told about his capacities for gormandising; and it is fortunate for him that, in addition to great strength, he is endowed with unusual cunning.

Indeed, this seems to be his great characteristic, and renders him the determined enemy of other animals, and even indirectly of man himself. He has a keen nose for other creatures' goods, and many a poor beast which has carefully hidden the remains of its last meal finds, when it comes back to eat these, that the Glutton has been beforehand and consumed its little store. The robber takes good care not to be retaliated upon, by indulging in its filthy practice of defiling what it cannot eat at

the time, thus insuring that no one else can enjoy it; for it is said that no other creature but the Glutton itself, however famished, can eat food that has been thus tainted.

The Glutton will treat in this way a *cache* made by the trappers, into which it has failed to make an entrance; and if it does get in, it creates lamentable havoc, for it destroys everything which is not edible, or carries the objects away, if small enough, and hides them, out of pure mischief, apparently. In a similar spirit it hunts up the traps set for the fur-bearing animals, such as Martens, eats the bait, and springs the trap, taking good care not to get caught itself. The Martens themselves it does not usually care to eat; but, in pursuance of its usual policy, it mauls and spoils them, and hides them in the snow or up in a tree.

It is not surprising that an animal with these characteristics is cordially detested by trappers; indeed, "Indian Devil" is one of the names commonly applied to it in the fur-countries of North America, where the animal is best known, and where the above characteristics have been especially noted. When it comes to trapping the Glutton itself, the task is one of the greatest difficulty; the beast is so cunning that it has been known, when a spring-gun was set for it, to gnaw through the cord communicating with the trigger, and so appropriate the bait in safety. Like so many other cunning people, however, the Glutton sometimes over-reaches himself, and accordingly it is found that the best plan for catching him is to bury the trap, bait and all, as if one did not wish him to find it, in which case there is a considerable chance of his wariness being discounted by his desire to unravel the mystery. When captured, the animal is of some use as furnishing a valuable fur, but not very many skins come into the trade. The female Glutton deposits her young in a burrow; they are born about midsummer, and number four or five. At first they are very much lighter than the adult, being only cream-colour, and the mother displays the most desperate courage in defence of them; indeed, the Indians say they would rather meet a she-bear with her young than a Glutton.

The Glutton can be kept in captivity, and is generally on view at the London Zoological Gardens. When taken old, however, it is usually

almost impossible to tame, and, though the cubs are tameable and playful enough, they become more and more surly as they advance in years.

THE TAYRA

(*Galictis barbara*)

THE Tayra is, though a powerfully-built animal, distinctly of the usual Weasel type and form—long-bodied and low on the legs. The tail is long, and the coat short and close, of a deep-brown colour relieved by a yellow patch at the throat. The beast is of a good size, rather exceeding that of a Cat.

It is a South American animal, and widely distributed, ranging from Demerara to Paraguay. It keeps to cover, haunting either high grass or forest, and making its home in a hollow tree or the burrow of an Armadillo. A pair live together, and they hunt in the morning up till noon, and again in the evening. Their food consists of birds and small beasts, and they readily climb trees in order to rob nests or obtain the honey of wild Bees. As they readily approach human habitations, and commit great ravages among the poultry, they are regarded as pests; in fact, their whole habits, like their appearance, are similar to those of the Martens.

Like Martens, also, they are easily tameable, will eat almost anything, and can be allowed to run about a house like a Cat, proving more useful than that animal in destroying Rats and Mice; but it is impossible to cure them of their propensity for attacking poultry.

THE GRISON

(*Galictis vittata*)

THE Grison, another South American animal with much the same range as the Tayra, and closely related to it, is, however, much smaller—being hardly larger than our Polecat, if shorter on the legs. In colour

also it differs considerably, being mostly black, with the crown and more or less of the back grey. Its expression is peculiarly villainous, and rendered more impressive by the way in which the beast will sit up and look at one. The Huron, as this animal is often called, has a habit of hunting in packs, but, except for this, its manners are much like those of the Tayra, and it is also a well-known farmyard pest. It can also make itself nearly as disagreeable as the Skunk when annoyed, it being possible to smell the scent it emits at least fifty yards off.

Notwithstanding this, it is sometimes tamed, and specimens are on view at the London Zoological Gardens at the time of writing.

BADGER
By C. E. Swan

THE BADGER

(*Meles taxus*)

The Badger was evidently once a very familiar animal; such expressions as "badgering," proverbs like "grey as a badger," and the number of place-names beginning with "Brock"—a local name of the beast—bear witness to his former abundance in our islands; he is also a widely-spread animal abroad, extending all through Europe and Northern Asia.

Nowadays, the Badger cannot be called a common animal in Britain, but is still to be found almost everywhere in small numbers, and would probably be quite well known if he were not such a recluse. He is generally a woodland animal, but sometimes frequents rocks, and is very strictly nocturnal, for he does not come out before nightfall, and takes good care to be back home and in bed an hour before sunrise. When on the move, he travels at a fairly good pace, though with the flat-footed gait of a Bear, an animal which he much resembles in many ways, though really a member of the Weasel family. His fore-claws are very large and powerful, and he is a great burrower, his earth being large and commodious, and having several chambers and entrances. Not being very active, he has to rely on his powers of self-defence when abroad; he is extraordinarily tough in the skin, and can give a most powerful bite, so that he is a match for anything of his own weight. His great biting-power may be partly explained by the peculiar articulation of the jaw; in most animals this falls away from the skull when the bones are cleaned, but the knuckle-ends of the Badger's jaw are so firmly gripped in bony sockets that it cannot be separated from the skull without breakage of the bone.

The Badger is a fair-sized animal, some heavy old males reaching the weight of forty pounds, though this is exceptional. His colour is well shown in the illustration, but it is worth mentioning that the species

is rather subject to albinistic variation, white Badgers turning up more frequently than might be expected. At the present time, also, there are at the London Zoological Gardens a pair of cinnamon Badgers, in which the black and grey tints are replaced by chocolate and sandy-colour.

The Badger is essentially "a good easy" beast; he loves a good meal and a soft bed; the latter he takes care to provide by carrying into his earth quantities of well-dried fern or grass, which he hugs in armfuls and then backs into his den with it. He is very cleanly, and suffers a good deal by the Fox's intrusion into his well-kept house. Not that he seems to object to Reynard's company, and of course he is not afraid of him; but the Fox, for all his trim and smart appearance, is a dirty beast, and the way in which he leaves decomposing fragments of his meals about, and otherwise makes his surroundings unpleasant, is too much for the cleanly Badger, who often leaves his den in consequence.

The Badger's love of good living is easily gratified, as he is one of the most omnivorous of all beasts. He relishes a nice young Rabbit dug out of the nest, and no eggs that he can find come amiss, while beetles, worms, slugs, and in fact any small creature he can catch, suit his palate well. He is fond of wasp-grubs, and makes no difficulty of the stings of the old Wasps. Nor does he despise vegetable food, eating roots and fruit readily: in fact, people who feel, as many do, a fondness for this quaint and harmless beast, find one of the best ways of conciliating him is to strew dates and raisins at the entrance of the earth. By such kind treatment it is possible to get some insight into Badger life, which seems a pleasant and sociable existence. The male and female live together all the year round, and the cubs remain with their mother quite a long time. She is as careful of their toilet as a Monkey, and carefully examines them every evening for parasites. In winter the Badger comes abroad very little, and in severe weather may almost be said to hibernate.

It is not an easy matter to trap a Badger, as it needs a strong trap to hold the beast, and he is so cunning that he will deliberately spring again by turning a somersault on it, the jaws getting no grip on his broad

back. The best way to take him is to place a sack in the entrance of his earth when he is out foraging, and then hunt him back home with Dogs, when he will bag himself in his hurry.

As is well known, Badgers used to be largely captured for the brutal sport of "Badger-drawing," the beast being given a barrel to retire into, whence the Dogs were expected to pull him, if they could, for to do so severely taxed their pluck and strength. The chief motive for the capture of Badgers nowadays is the use made of their hair, which is worked up into all sorts of small brushes, especially shaving-brushes. The flesh also is esteemed in some places, the hind-quarters in particular being reputed to make good hams.

Badgers do well in captivity, and often breed in that condition, while, if taken young, they can be made so tame as to run at large.

THE AMERICAN BADGER

(*Taxidea americana*)

It often happens that the North American representative of an Old-World species differs little, if at all, from it; but the American Badger is very noticeably different from ours, although the relationship of the two beasts is obvious enough. The general colour is very similar, but the American animal has a much narrower stripe of white down the face, which is continued down the back, and the head is somewhat differently formed. The body is also peculiarly broad and flat-looking.

The American Badger is a beast of the plains, where it lives in burrows, relying on this and on its great strength for safety against the Wolves. It is mainly carnivorous, living on small beasts like Mice, "Gophers" and Ground-squirrels, which it digs out of their holes.

THE HOG-BADGER

(*Arctonyx collaris*)

Our Badger is in many ways reminiscent of the Bear and the Pig, but this Indian animal is at once more bearish and more piggy, so to

speak, as it is higher on the legs than the true Badger, and also has a very pig-like snout. The native name for the animal, *Bhaloo-soor* (Bear-pig) recognises this, as well as the English title. The Hog-badger is said to be able to stand on its hind-legs as readily as a Bear; in its general habits it is not unlike the common Badger, being omnivorous and dwelling in rock-crevices or burrows.

THE RATELS

THE Ratels (*Mellivora*) are more bear-like in general form than the other Badgers, and are remarkable for having no external ears and for their very short and scanty coat. Two species have long been distinguished, the African (*Mellivora capensis*) and the Indian (*M. indica*), but they are so closely allied that they might fairly be reckoned as local races of one. Both are black below and on the muzzle, and grey above, the African species having the grey upper parts bordered with white. Recently an entirely black species (*M. cottoni*) has been described from the Ituri forest in Central Africa.

Like Badgers generally, Ratels live on the ground and in holes, but climb trees occasionally. They seem to be more carnivorous than the ordinary Badger, and the Indian species is said to dig up graves in order to devour corpses, which, after all, is a feat any carnivorous animal which is a good burrower might be expected sometimes to perform.

The African Ratel is very fond of honey, and is said to be guided to it by those wonderful little birds the Honey-guides (*Indicator*), so well known for their habit of taking men into partnership in honey-getting. In captivity Ratels live remarkably well, and are most amusing animals; whatever their habits may be in the wild state, they are active enough by day in captivity, and show themselves remarkably good climbers. They also so frequently show the habit of turning somersaults, that it would seem likely that this is one of their actions in a wild state, whatever the purpose of it may be under those circumstances.

SKUNKS
By Louis A. Sargent

THE SKUNK

(*Mephitis mephitica*)

EVER since the pioneers of civilisation in America made his acquaintance, the Skunk has enjoyed a reputation a good deal wider than it was high, on account of his remarkable power for making himself objectionable when interfered with.

He is a member of the Weasel family, but is a clumsy, slow, heavily-built animal compared to the typical Weasels, nor has he their strength and ferocity, though his comparative immunity from molestation by other animals gives him impudence.

The illustration well shows the colour of his pied coat, but the amount of black and white on it varies a great deal; the latter colour is always, however, on the upper surface. The tail in some varieties forms a beautiful white brush, which the beast holds aloft as a kind of danger-flag in his nightly walks abroad.

Secure in his defensive artillery, he does not hurry himself, and shows hardly any fear of man; indeed, such is the respect in which he is held that no one will venture to drive over him, and if he comes into camp and starts rifling one's provision basket, he cannot be summarily ejected for fear of consequences, for any article tainted with his odoriferous secretion is useless ever afterwards.

This powerful fluid is of a yellow colour, and clear; it is contained in two sacs situated under the tail, and can be ejected to a distance of three or four yards. Its offensiveness consists not only in its vile smell, but in its appalling pungency; it painfully affects even a Dog—an animal which has a decided taste for some smells which are highly objectionable to us—and if it reaches the eye gives rise to much pain and serious inflammation. If the animal is killed instantaneously, as by a shot through the head, it has no chance to avenge its death, but of course this is not always practicable, so that the Skunk is habitually treated with a deference as great as it is begrudged.

Another odious attribute of the beast is its habit of approaching sleeping people and biting them—not from spite, apparently, but from a wish to eat them, just as Rats sometimes do; but the Skunk's bite is said to produce hydrophobia, and in any case it is greatly dreaded even by such hardy and courageous men as the Western cowboys.

Enough has been said to show that the Skunk's ill name has certainly sufficient justification; but, except for its stench and its bite, it is really an excellent little animal. Although of fair size for a Weasel, being about as big as a small Cat, it is less bloodthirsty than most of its tribe, though occasionally guilty of raids on the hen-roost. Its ordinary prey consists of mice, frogs, insects, and so forth, and it really does a great deal of good in the destruction of vermin.

It is a ground-animal and a burrower, having large powerful claws on the fore-feet; in its burrow its young are deposited. They keep with the parent for some time after they can go about, and when quite small will erect their tails, stamp, and make ready for action with as much energy as the old ones. Skunks become very fat in autumn, and hibernate in the northern parts of their range, for the species is a wide-ranging one, being a familiar animal from Canada to Guatemala. It shows, however, much local variation, and several races are distinguished.

The flesh of the Skunk is quite good to eat, being white and tender, and is appreciated by the Indians, while the fur is well known to ladies. The animal is also devoured by some predatory creatures, in spite of its smell, which, of course, may not necessarily offend the nostrils of all creatures.

Skunks can be tamed if taken young enough, and make very nice pets; but I fancy few people would care to keep them unless the scent-glands had been removed, an operation which can be successfully performed. Thus the animal has been exhibited at our Zoological Gardens, and a female and her young, which were quite small when the family was imported, are there at present. These animals when annoyed show unmistakable signs of what they would do if they could, so that a specimen in full possession of its powers would demand more consideration than could be conveniently given in a menagerie or even a private household.

THE SOUTHERN SKUNK

(*Conepatus mapurito*)

The Skunk of South America, which ranges north into the territory of the other, in Texas, and extends south to Patagonia, although similar in general appearance to the northern species, is a very distinct animal, larger, heavier in build, and with a much more pig-like snout. Its general colouration is similar, and is also very variable, but it is apt to show more white, some specimens being of this colour all along the upper parts, which gives them a very handsome appearance.

As a scent-producer the South American Skunk is quite equal to its northern relative, and the same sort of stories are told about it. It is, however, also not always immune from the attacks of beasts and birds of prey; though on one occasion a Caracara or Carrion-hawk (*Polyborus brasiliensis*) was seen to be woefully discomfited by getting the discharge of his intended victim full in his face. This, however, was the bird's own fault; with the cowardice of his kind, he had been making a half-hearted attack on foot from behind; the crushing pounce and grip of a nobler bird of prey would have had a very different result.

The South American Skunk is said to be unable to discharge its fluid if boldly seized by the tail, though it is only fair to say that there is a difference of opinion on the matter! No doubt there is a right and a wrong way of "tailing" a Skunk, and so good an observer as Mr. O. V. Aplin has actually seen it done successfully. As in the case of the proverbial nettle, half-hearted measures in grasping the offence, such as the unfortunate Hawk tried, are of no use.

THE SMALL SKUNK

(*Spilogale putorius*)

In the more central parts of America, from Guatemala north to the Southern United States, is found a little Skunk not larger than a

Ferret, and more delicately shaped than the other species. Its colouration also differs in detail, the white markings being more numerous, but, like Skunks generally, it shows much local variation.

THE ZORILLAS

THERE are no true Skunks in the Old World, but some very colourable imitations of them exist, which after all are very nearly allied, being themselves members of the Weasel family. The African Zorillas (*Ictonyx*) connect the Skunks with the typical Weasels, in size and form resembling Polecats, while they have the black-and-white colour of Skunks. As in the small Skunk, the most Polecat-like of the Skunk groups, the stripes in the Zorillas are more numerous than in the large Skunks. Zorillas not only look like Skunks, but are said to smell nearly as bad; notwithstanding this, however, they are often tamed, and many specimens have been exhibited at the London Zoological Gardens.

THE TELEDU

(*Mydaus meliceps*)

IF on the one hand the Skunks approach the Weasels, they are on the other even nearer the Badgers, the Teledu, which ranks as a Badger, being in several respects very like a Skunk. This animal, found in the mountains of Java and Sumatra, is a small beast, hardly as big as a Cat, with a badger-like general shape, long pig-like nose, and very short stump-tail well tufted with hair. In colour it is dark brown, with white along the back, and, in addition to this Skunk-colouration, it is able to produce an odour which fairly rivals that of the real Skunks. For the rest, it is a burrowing animal, and feeds much on earthworms. Though said to be easily tamed, it seems rare in captivity—it would certainly not be an inviting pet, as it is not even good-looking—and I have never heard of its being brought to Europe alive.

OTTER
By C. E. Swan

THE OTTER

(*Lutra vulgaris*)

ALTHOUGH very seldom seen, owing to its caution and nocturnal habits, the Otter is the most widely diffused of our larger animals, and there are few streams which it does not occasionally visit, while on the Highland coast it frequents the sea-coasts. In size the Otter may be compared to a medium-sized Dog, although very low on the legs, which are furnished with webbed five-toed paws. The general structure of the beast is that of a large Weasel, and the existence of the Mink shows how the Otters may have evolved from a land-animal of the Weasel kind. The coat of the Otter is composed of two sorts of hair, long piles which form the external surface, and a short thick fur which is not seen till the long hairs are removed. There is little variation in colour, but albinos have been recorded. The male Otter is rather more than a yard long, and weighs about twenty pounds, the female averaging about five pounds less; but much heavier individuals occur, dog-Otters of over thirty pounds being on record, and one, taken more than a century ago, weighed over forty.

The Otter is beautifully adapted for an aquatic life, and spends a great deal of its time in the water in pursuit of the fish on which it preys to a great extent; its motions are beautifully easy and rapid, and it readily captures small fish, though it is not a match in speed for those approaching its own size. Among fish, eels are its favourite food, and it is by no means especially destructive to game fish such as trout and salmon. Like most of the Weasel family, however, it is apt to be wantonly destructive; and when food is abundant is very dainty, often only eating a small piece from the back of the neck of a big fish, and then catching another. Indeed, St. John tells a story of an old Highland woman who, living near a salmon river, looked on the neighbouring Otters as very useful providers, since on most days

they left her a fine fish which she thought "was none the worse for the bit the poor beasts had taken for themselves." In spite of its special adaptation for an aquatic life, the Otter does not confine itself to a fish diet; it also feeds on Frogs and on waterfowl, especially Moorhens and Dabchicks, while its character is not above suspicion in the matter of poultry and Rabbits.

Either in search of such prey, or in shifting its quarters, the Otter travels about a good deal on land, where it moves actively in a sort of jumping gallop; it is a great wanderer, seldom staying long in one locality, and thus it is that it is sometimes found in most unlikely places. Sometimes, too, it lies up in a hedge or other covert away from the water, but more often its den or "holt" is in some hole quite close to the water-side.

Here the female deposits her cubs, which may be born at any time of the year, and may number as many as six. She is a fond mother, and takes great care of her young; their first education seems to be in catching Frogs in the meadows, for they do not take to the water at once. Otters are playful creatures, and spend much time in aquatic gymnastics, even when adult. Their note is a sort of whistle, but they also utter a harsh yelping mew.

Otter-hunting, as it is carried on in summer, and on foot, has attractions of its own, and the practice undoubtedly makes for the preservation of this interesting creature, though, even if the pursuit of the Otter were not followed, it does not do enough harm to justify very rigorous measures against it. The fur it furnishes is a good one, and the flesh has been used for food; it is said to be permitted to be eaten as fish by the Roman Church.

The hound proper for the chase of the Otter is rather smaller than the Fox-hound, and rough-coated; it is very mellow-voiced, but savage in temper. Fox-hounds will also hunt the Otter well, and are often used for the purpose. The barbarous custom of spearing the poor brute when hunted down has now long been obsolete, fortunately, and the only interference permitted is the "tailing" of the Otter under certain circumstances, or the lifting of it with the leaping-pole carried

by the followers of the hunt, and this only in exceptional cases. Any one "tailing" an Otter, by the way, has to be careful, or he is likely to find out that the quarry can inflict a very severe bite.

Young Otters brought up by hand make very interesting pets, and can be taught to catch fish for their masters; in captivity they have been observed to eat horse-chestnuts, which looks as if the wild animal may sometimes vary its carnivorous diet.

The Common Otter has a wide range, all across Europe and Northern Asia, while it is also found in India.

In that country, however, another Otter is common, the Small-clawed species (*Lutra leptonyx*); this is only about as large as a Cat, and, as the name implies, has very small claws. In general appearance it is much like our species, and indeed all Otters look much alike but for size. They are found everywhere except in the Australian region.

In Africa two Otters are well known, the Spotted-necked (*Lutra maculicollis*) which is very similar to our Otter but with brown spots on the neck, and a much larger kind, the Clawless Otter (*Aonyx inunguis*), which has no claws at all, and the feet only half-webbed; this species seems to be less thoroughly aquatic in its habits. The North American Otter (*Lutra canadensis*) is much like our own, and supplies most of the Otter skins which come into the fur trade.

In South America there occurs the giant of the group, the great Brazilian Otter (*Lutra brasiliensis*), which is twice as large as ours—nearly as big as a small Leopard, in fact. These great Otters are often seen in small parties in the rivers, and they show little fear of man; in fact, in some places the natives seem to be rather afraid of them.

It is suggested that the mysterious "Water-tiger" of Patagonia, a river-haunting carnivore which is dreaded by the Indians—by no means a timid set of savages—and leaves tracks as big as a Puma's, is a large race of this beast, or some nearly-allied species; but so far no European has got even a sight of it, though more than one traveller has been convinced of its existence.

THE SEA-OTTER

(*Latax lutris*)

THE Sea-Otter is very distinct from all the other species, and in some respects, both in appearance and habits, approaches the Seals. It is rather short and bulky in form, with the tail comparatively short and bushy, not sleek and tapering as in ordinary Otters. The toes of the fore-feet are remarkably short and stumpy, while those of the hind are very long, increasing in length from the inside outwards, and, as they are fully webbed, the whole foot distinctly recalls a Seal's flipper.

The animal is much bigger than the Common Otter, and of a dark-brown colour, silvered by lighter hairs. It is only found on the North Pacific coasts, and chiefly about the islands of the Aleutian coast, and is now rare even there, being so much persecuted for its skin, which is one of the most valuable of furs.

It spends almost all its time in the water, and is slow and awkward on land; indeed, it is said that its single cub is often brought forth on the floating beds of kelp-weed. Its mother often nurses it while lying on her back in the sea, this position being a favourite one with the animal.

The Sea-Otter does not feed much on fish proper, but on clams, mussels, sea-urchins, and such-like "shell-fish"; it is also stated to eat sea-weed. In accordance with this diet, its grinding-teeth are much broader in the crowns than those of the typical Otters, being adapted for crushing rather than cutting. It is said not to be possible to keep this animal in captivity, but all such statements should be received with caution; probably the right method has not been tried in this, as in so many other cases of the kind.

Sea-Otters are now usually procured with the gun, and are very timid and wary; it is greatly to be wished that the pursuit of them could be regulated or even put a stop to for a time, as it would be a great pity if so valuable and interesting an animal were allowed to become extinct.

WHITE-NOSED COATIMONDIS
By Louis A. Sargent

THE WHITE-NOSED COATI

(*Nasua narica*)

THE Coatimondis are the quaintest-looking members of the small family of carnivores known as *Procyonidæ*, and chiefly inhabiting America. The absurd-looking long nose, which is remarkably flexible, is confined to the Coatis, but the long tail and short legs, with five strongly-clawed toes on each foot, are family characteristics, as is the climbing habit. The canine teeth are remarkably strong, and flattened sideways like knife-blades. In size the Coatis are about equal to a Scotch terrier; there are two species, the White-nosed one represented, which is Central American, and the Ring-tailed Coati (*Nasua rufa*) of South America. Both species vary very much in colour, but the more distinctly ringed tail of the Southern species is a fairly good distinction as a rule, and it has longer ears and a coarser coat. Its general hue is foxy-red, but it is sometimes iron-grey.

Coatimondis are forest animals, and wander about either singly or in troops, in search of prey. The White-nosed species, called Pisoti in Nicaragua, was watched by Belt in that country hunting the great Iguana Lizards: a single individual seemed to have but poor luck, for so soon as he got near his apparently unconscious victim, the Lizard would, according to its habit when alarmed, drop down to the ground, so that nothing was left for his pursuer but to follow suit and try again. The more usual method of the Coati, however, was to hunt in packs, some climbing the trees to rouse the game, while others ran below, so that any unfortunate creature hoping to escape from the scaling party by a jump would simply fall into the arms of those underneath.

In addition to reptiles, birds, and other animals, the Coatimondis feed on fruit and other vegetable substances, being, like all the Procyonid family, omnivorous to a greater or less extent. They show great dexterity in manipulating their food, using the fore-paws more or less like hands, while the snout is used both as a feeler and for ploughing up the ground, in search of insect-grubs and worms.

Coatimondis of both species are frequently kept in captivity, and are commonly on view in our Zoological Gardens. They are, in spite of the warm countries they inhabit, quite hardy, and winter well in covered dens outdoors, while their quaint appearance and ways make them amusing pets. They are, however, very vicious to each other, so that it is not an easy matter to get even a pair to live together. Both species, however, have bred in captivity.

THE RACCOON

(*Procyon lotor*)

As in the case of the Coatis, there are two species of Raccoons, but these very closely allied, the Crab-eating Raccoon of South America (*P. cancrivorus*) differing chiefly from the Northern species in its short coat. The long handsome grizzled fur of the common Northern Raccoon is a familiar constituent of rugs, and appended to these are seen the pretty black-and-yellow-ringed tails of the animals. In size and general form the Raccoon is not unlike a Fox, especially about the face, which is black about the eyes, forming a sort of mask. The tail is, however, much shorter and less bushy than a Fox's, and the peculiar humping of the back as the animal walks, the fact that it goes on the soles of its feet and not on the toes, together with the full development of all the five toes, and their almost finger-like freedom of action, marks out the creature as something quite different from the Dog tribe.

Being common over North America generally, the 'Coon, to use the familiar abbreviation of its name, is a very well-known animal, although, from its very nocturnal habits, one that is not frequently seen unless hunted for. It passes the day in a hole or fork in some large tree, rolled up with its head between its fore-paws, and at night prowls about in search of food, which consists practically of anything it can get, vegetable or animal. It is a great robber of hen-roosts, and also has some idea of fishing, adroitly hooking out the unfortunate fish with one of its nimble paws, which are almost as hand-like as a Monkey's. It is very destructive to maize-crops before the grain has hardened.

In cold winter weather it hibernates, a whole family often occupying the same den. The young are born in the spring, and number up to six; they stay with the parents for one season at least, being sociable creatures.

The use of the Raccoon's fur has been previously alluded to, and it may be mentioned that its flesh is sometimes eaten. For this reason, and on account of its occasional misdeeds, it is hunted a good deal, but nevertheless holds its own, and is apparently even spreading, life in a settled country suiting it.

Raccoons do well in captivity; the Northern species at any rate has bred in the Zoo, and the Southern one, curiously enough, stands outdoor life quite as well. They show themselves very cunning and intelligent, and have the remarkable habit of washing their food in water before eating it: this has very long been known, the scientific name "*lotor*" meaning "a washer."

THE KINKAJOU

(*Cercoleptes caudivolvulus*)

THE pretty animal known by this name was originally classed as a Lemur, and indeed it is somewhat like one in general appearance, while, although its paws are furnished with claws instead of nails, they are so hand-like in use that the beast can hold a bit of food in one and break pieces off it with the other. The tail is long and strongly prehensile, this being the only carnivore but the Binturong which possesses a tail of this type. In size the Kinkajou about equals a Cat; its coat is short and thick, and of a peculiar sooty yellow in colour. It is a South American forest animal, nocturnal, and an active climber, and lives chiefly on fruit. Its tongue is long and very extensible, and it is fond of honey. In captivity it makes a nice pet, and is often kept. Very similar to the Kinkajou is the Bassaricyon (*Bassaricyon alleni*), also a South American animal of this family. This, however, is a rare beast; it has not the long tongue of the Kinkajou, and is ill-tempered—at least, the specimen shown at the Zoo was so—so that any one who gets hold of a short-tongued and short-tempered Kinkajou has got a bargain from the scientific point of view.

THE CACOMISTLE

(*Bassaris astuta*)

THIS pretty little animal, about the size of a small Cat, is remarkable for its long thickly-furred tail, ringed with black and white. Its coat is grey, and its face rather fox-like; the claws are somewhat retractile. It is found in Mexico and Central America, and is an omnivorous nocturnal tree-climber. It is often tamed, and makes a charming pet, but only one has ever found its way to our Zoo. There is another species (*Bassaris sumichrasti*), which much resembles the common one.

THE PANDA

(*Ælurus fulgens*)

THE Panda is the only member of the 'Coon and Coati family which is found out of America, being a native of the Himalayas. It is a thick-set animal about as big as a small Fox, with a short face like a Cat; the eyes, however, are small, not large and full like a Cat's eyes. The tail is long and bushy, and all the fur very full, even on the feet. The colour of the coat is very beautiful, a rich maroon-red, shading into black below, and with white on the face; the tail is ringed with light and dark red.

The Panda is, like all this family, a climber, but it appears to be particularly vegetarian, feeding mostly on fruit and leaves, especially bamboo-shoots. In accordance with this habit, its teeth are more adapted for grinding vegetable food than those of other carnivores, and its canines are small; it is also very slow and harmless for a beast of the carnivorous order.

Being uncommon, and very intolerant of heat, so that it can only be brought down to the Indian sea-coast during the winter season, it is seldom seen in captivity even in India; but I once saw a beautiful specimen in Calcutta, and one or two have reached the London Zoological Gardens.

POLAR BEAR AND CUBS
By Louis A. Sargent

THE POLAR BEAR

(*Ursus maritimus*)

A BEAR is usually taken as the type of everything that is uncouth and grotesque, but the splendid White Bear of the north, "the whale's bane, the seal's dread, the rider of the iceberg, the sailor of the floe," as Kingsley calls him in that most living of historical novels, "Hereward the Wake," is a creature fit to rank in beauty alongside the great animal nobles of the Cat family. In size he surpasses all other Bears except the Alaskan race of the Brown Bear, reaching nearly nine feet in length, and his proportions incline to elegance, his neck being longer and his head smaller than in other Bears, while the aristocratic straightness of his profile is another distinctive mark, though this occurs also in the Grizzly Bear. The soles of his feet are largely covered with hair, to secure his footing on the ice; what naked skin is visible there is black, like the muzzle, lips, and even the inside of the mouth, contrasting beautifully with the white fur. The fur, by the way, is not always pure white, generally having a creamy tinge; it is whiter in young animals than in adults, and it is noted that the large white specimens whose colour is particularly pure are those which carry the most fat. The male is larger than his mate, but otherwise they are much alike.

The Polar Bear is noticeable as being one of the very few beasts which are white all the year round, the only others being three very different ones, the Rocky Mountain Goat (*Haploceros montanus*), the South American White Bat (*Diclidurus albus*), and the Beluga or White Whale (*Delphinapterus leucas*), also an Arctic animal. Every one knows, of course, that the Polar Bear is peculiar to the Arctic regions; and, like so many Arctic animals, it is found all round the world. It is much more aquatic in habits than any other Bear, taking to the water readily, and diving and swimming with great power; it is also very active in its movements on land, and, although it has no trees to exercise its climbing powers upon, no doubt finds

sufficient scope for them among the rocks and icebergs of its native home, for it is certainly very sure-footed. Its food is chiefly animal, and consists of whatever it can find or catch; one day it may have a bountiful feast off the carcase of a stranded Whale, on another it will make a lighter repast off the eggs or young of the numerous Arctic seafowl.

The various Seals, however, are its most especial prey, and it displays great cunning in stalking them at the breathing-holes they make in the ice in winter. It is said, at such times, when making its stealthy approaches, to cover its black nose with its paws, lest this little spot of colour should betray it to its victim, and, from what I shall have to relate further on of its intelligence in captivity, the story does not seem impossible. In spite of the carnivorous habit it usually displays, however, it has the usual liking of its family for vegetable food, and feeds on the scanty Arctic herbage when summer makes this available. When, also, it comes across and breaks into a *cache* made by European visitants to the Arctic regions, almost everything is sampled, down to coffee and canvas. Indeed, from its great strength, it is a serious nuisance in this way, and stores need to be well secured from its powerful paws. Nowadays it seems not to make attacks on man himself, but the earlier explorers found it a serious foe, which approached them fearlessly and ferociously, and several cases of man-eating are put on record in the relations of the old voyagers.

Polar Bears usually prowl about singly, but several may at times be seen in company; the female is long accompanied by her two cubs, for which she shows a most touching affection, carefully providing them with food, and readily dying in their defence. They are born in the winter time, the female making her lair under a rock and letting herself be snowed in. Here she remains till spring almost in a state of hibernation, but continuously suckling her cubs, which are born very small, only about the size of Rabbits. Males also hibernate if they are fat enough in autumn, but otherwise they prowl about all the winter.

So powerful a creature as the Polar Bear has naturally few enemies. It may, however, now and then get the worst of it in an attack on the Walrus, or have the misfortune to be drifted out to sea on the ice. In this way individuals may be stranded as far off as Iceland, but no doubt they often perish at sea, in spite of their swimming powers. Man,

however, is this beast's most dangerous active enemy, and finds the flesh excellent as food, though the liver, curiously enough, appears to be a dangerous article for human consumption, and is hence given by the Eskimos to their Dogs. The skin, of course, has considerable value as a fur. Although so large and active a beast, the Polar Bear does not seem to be very dangerous; it is observed to be particularly given to biting, rather than to using its fore-paws in attack like Bears in general.

A good many specimens are captured for menageries, for the Polar Bear has been valued as a curiosity ever since the days of the Vikings.

It bears the climate of Europe well if supplied with a good bath, not seeming more distressed by the heat than other Bears, at any rate in England, and it is far more amusing and lively than any other species except the Malayan Bear. Captivity introduces it to many delicacies which it could not taste when at large, and it shows itself very handy in dealing with them; it peels an orange with its claws with great skill, and will make a current in its tank with its paw to bring a floating object to the margin. One clever female in the Bristol Zoo learnt to break cocoa-nuts by flinging them against the bars of the den; but the acme of Bear astuteness was reached by old "Sam," who died in the London Zoological Gardens after the very cold summer of 1903, thus giving rise to many jokes about our inclement climate. "Though born and bred upon an Arctic hummock, Autumn's excesses went against his stomach," said one rhymer of him. Sam, however, had often had his laugh at the public. It was his custom to put a piece of his rations on a low wall which skirted one side of the den, and then sit down with his back against the said wall. In this position he was invisible to visitors coming down a raised path outside it; these would, however, see the bit of food, and often charitably endeavour to push it through the bars to him with their sticks or umbrellas. But the ungrateful Sam, whirling round like a flash, would snatch these articles through, and they were of no particular value when he had done with them. This trick of his was well known at the time, and attracted much attention; I had the account from his own keeper.

The Polar Bear has produced hybrids in captivity with the Brown Bear; in a small Zoological Garden in Germany several such specimens were bred, the Polar Bear being the father. Most remarkably, it proved to be the case that these hybrids were quite fertile, both when paired back

to Polar or Brown Bears, and even between themselves. One hybrid and a three-parts Polar specimen were on view at the London Zoological Gardens when this book was written.

THE PIED BEAR

(*Æluropus melanoleucus*)

ALTHOUGH this animal is nowadays classed along with the Panda in the Raccoon and Coati family, and is often called the Great Panda, it is at any rate closely related to the Bears, and, being like a Bear in form and size, may be conveniently noticed here: no doubt, if the Raccoons and Coatis were not known, it would rank as merely an abnormal member of the Ursine family. It is a small animal for a Bear, and very curiously coloured, the main hue being white, with the limbs, ears, a band across the shoulders, and a ring round each eye, jet black. The tail is short as in the true Bears. This animal inhabits the high regions of the east of Tibet and the north-west of China, and little is known about it. It appears, however, to be chiefly a vegetable feeder like the ordinary Panda. As it has never been shown in captivity, it is one of the few of the world's remarkable beasts which are still desiderata in our Zoological Gardens.

THE BLUE BEAR

(*Ursus pruinosus*)

THERE is a little-known true Bear inhabiting much the same regions as the above animal, of which only one or two specimens have come to hand. This is known as the Blue Bear from the colour of its coat, which is of the colour known as "blue roan" in a Horse, an intimate mixture of black and white hairs. The coat is long and thick, and the ears are very furry; in size the animal is rather small, considerably less than the ordinary Brown Bear.

BROWN BEARS
By C. E. Swan

THE BROWN BEAR

(*Ursus arctos*)

THE Brown Bear is *the* Bear *par excellence* with most people, and it certainly has the widest distribution of any of the family, being found all along the northern parts of the Old World, while it reappears in Alaska as a very large race, even superior in size to the famous Grizzly, which takes the Brown Bear's place in part of North America. In historic times the Brown Bear inhabited countries from which it has since been nearly or completely extirpated; thus, all students of Virgil remember his mention of the "Libyan she-bear," although the Bear is nearly extinct in North Africa, and other Roman writers remind us of the former existence of the Bear in Scotland. The Scotch Bears were of peculiar ferocity, for the Romans of the Empire took the trouble to send all the way to this remote country of Caledonia for Bears savage enough to act as executioners to Christian martyrs. In Africa south of the Sahara there are no Bears of any sort; nor are there any in the Australian region.

The Brown Bear displays a good deal of local variation in its wide range, besides much individual difference; the coat of some is nearly black, while others verge on silver-grey. The races inhabiting Syria and the Himalayas are of a light drab, with a white crescent on the chest, which, by the way, is commonly found in young individuals of the species in Europe. The Syrian Bear is always comparatively small, but it can be formidable enough, and its encounters with mankind are well known to Bible students. This Bear, however, varies much in disposition in different parts of its range, and in the Himalayas, where it is called "Red Bear" or "Snow Bear," to distinguish it from the Himalayan Black Bear, it is not regarded as dangerous to man, and may even be seen feeding close by Sheep or Goats. Indeed, as a whole, the Brown Bear, like most of its family, is a vegetable-eater

and hunter of small prey rather than a carnivorous animal, its feeding habits being much like those of the Pig. Roots, herbs, the leaves and twigs of certain trees, mushrooms, and all sorts of berries, form much of its usual diet; its fondness for honey is well known, and, in contrast to this sweet food, it readily devours Ants, presumably on account of their acid flavour. It is, however, not averse to animal food, and as it advances in years, in Europe at any rate, is inclined to kill large animals for food, and then becomes a scourge to stock-owners, killing Horses, Cattle, Sheep, and especially Pigs; Bears in general seeming to have a strong liking for pork when they take to meat-eating at all. Although, however, people have often been killed by Bears, these animals seem not to take to man-eating. The Bear is fond of water, and likes, in hot weather, to bathe in it as well as drink. In Eastern Siberia and Alaska, and probably wherever fish swarm in the streams and are easily captured, he feeds largely upon them, so this gives him additional reason for haunting the water-sides. It is hardly necessary to say that so powerful a brute is a good swimmer when necessity arises, and, as everybody knows, he climbs trees readily. In descending these he comes down hind-first, unlike other climbing animals. His gait on the ground is rather heavy-looking, as, like Bears in general, he plants the whole sole of the feet on the ground, leaving a track much like a man's; but he can put on a very good pace, and no man could get away from him by fair running.

He stands, and even walks, on his hind-legs with ease, and has been known to carry off a heavy carcase in his arms when in this position, though more ordinarily he drags it with his mouth like a Wolf. In attack he also uses both paws and teeth, and can strike a most terrific blow, though the "hugging" that he is credited with seems not to be his custom.

One of the best-known of the Brown Bear's habits is his hibernation in winter; having fed fat on berries in the autumn, he chooses a snug den under a rock or in a hollow tree, and retires therein when the cold weather begins, to sleep the winter through. At this time

he is not so completely comatose as a Dormouse or Bat, but may be waked up fairly easily; the stomach and bowels are empty, and the vent plugged up with the débris of the last meal. This "tappen," as the plug is called in Scandinavia, is excreted in spring, when the Bear comes forth, at first still fairly fat and not unduly hungry, as his fasting stomach has to become accustomed to food; soon, however, he becomes lean and ravenous, and is then particularly apt to make raids upon large animals. He is a clumsy killer, and mangles his victims horribly.

During all the summer he does not put on much flesh, and some unhappy individuals never accumulate enough adipose capital to be able to hibernate.

It is during the period of hibernation that the she-bear drops her cubs, at the beginning of the New Year. The little creatures are in number from one to four, and only about the size of Rats at first. Their mother guards them with the most devoted care, and her ferocity when robbed of them is proverbial. She knows, however, the value of wholesome correction, and uses it if they are disobedient, applying smacks and even bites to the refractory cubs. In this way she makes them climb trees if she sees danger approaching. They remain with her a long time, and older cubs, of a previous litter, are said to be told off as nurses for younger ones; a not improbable story, for the same thing may be seen with the older and younger broods of one of our commonest birds, the Moorhen (*Gallinula chloropus*).

The voice of the Bear is a hoarse roar or growl, but in the ordinary way it is not a noisy animal. Its destructiveness to man's possessions is to some extent compensated for by its own value when killed; its fur is much esteemed for rugs, and the virtues of "Bear's Grease" have long been well known, while the flesh is also appreciated as food in some places; within the last year or two it was even possible to procure it in Leadenhall Market, but more as an article of curiosity in diet than anything else. Bear hams are supposed to be especially good.

It is not necessary to do more than allude in passing to the keeping of Bears in captivity. They do well in confinement, and live for many

years, but seldom breed, like Bears generally. A disposition to be surly and treacherous is also very marked in the Bear family, which are, if anything, more dangerous than the large Cats in menageries. "Dancing" Bears are far less common in our streets than formerly, and of course the cruel sport of Bear-baiting has long been extinct, though, from the frequent allusions to it in Shakespeare and other authors, it must have been one of the most cherished recreations of our forefathers.

THE GRIZZLY BEAR

(*Ursus horribilis*)

ALTHOUGH it is scarcely more than a local race of the Brown Bear, the Grizzly Bear of the Western States of America has such a reputation that it deserves the dignity of a separate heading. It is larger than any of the Brown Bears except the Alaskan race, with a straighter profile and enormous claws on the fore-feet; its coat also is shorter, but not particularly grey, the name being properly "Grisly," and referring to the animal's reputation for peculiar ferocity. This used to be well deserved enough, but what with constant persecution and the improvement in fire-arms, the Grizzly is not the formidable foe he used to be, and generally avoids a conflict wherever possible. He has also ceased to frequent the prairies, and keeps to the mountains and woods where he has not been exterminated. This Bear differs from most others in not climbing trees—at any rate when adult—and it also has particularly carnivorous tastes. In spite, however, of its enormous power, which enables it to deal such blows with terrible fore-paws as to tear away several ribs from a Bullock's spine with a blow, it uses this very largely to turn over stones in search of Mice and such small prey, and has the usual bearish love of fruit. In some places it is found alongside of the smaller and commoner Black Bear of America, but the latter takes care to avoid encounters with this terrible enemy. The Puma, however, is said not to fear it, and even to attack and defeat it, relying on its own great agility.

SLOTH BEARS
By Louis A. Sargent

THE SLOTH-BEAR

(*Melursus ursinus*)

ALTHOUGH this most uncouth of Bears has often been denominated the "Five-toed Sloth" and "Ursine Sloth," it has no affinity with the true Sloths, which belong to a very different order, and will be treated of in due course in this book. Its resemblance to the Sloth lies in its very long coarse coat, in the long claws, and in the fact that it exhibits a certain deficiency in the teeth. Other Bears, like the carnivora in general, have six incisor teeth in each jaw, but in the Sloth-Bear the central pair of upper incisors are wanting; the grinders are also small and set far apart.

The black coat, with the white crescent on the chest, is a constant character of this Bear, but what especially distinguishes it from other black Bears is not only the coarse shaggy fur, but the long muzzle and loose lips, and the power it has of protruding these, making the most extraordinary grimaces. Its form is also an exaggeration of the usual bearish uncouthness, and its gait so awkward that when going at a gallop it looks as if some invisible person was unceremoniously bundling it along from behind. It cannot compare in size with the larger Bears, a male not measuring more than six feet from nose to rump.

In spite of its abundant hair, the Sloth-Bear inhabits the hot plains of India, and is the characteristic Bear of that region. It is found in Ceylon as well as on the mainland, but not in the Himalayas, and it has disappeared, owing to persecution by sportsmen, from some of its old haunts, notably in parts of the Deccan and Bengal. It is generally found alone, but sometimes a pair, or the female with her two cubs, are found together. Their usual haunts are in hilly or forest country, and they are particularly fond of making their dens in caves where such shelter is available. It is chiefly at night that these Bears prowl about in search of food, which is chiefly of vegetable substances and insects, this being one of the least carnivorous of all Bears. In search of fruit it will climb

trees, and it actually sucks "white-ants" and beetle-grubs out of the ground, first blowing away as much of the dust as possible; this is, no doubt, the use of the great extensile lips. Although it is not positively averse to meat, it seems never to kill large animals for food, and its attacks on human beings, which are, unfortunately, not at all uncommon, seem to be due to the animal having been disturbed, or to sheer natural surliness. Although blessed with an excellent nose, the Indian Bear is not keen-sighted, nor is its hearing very good; thus it is liable to find itself suddenly confronted by a man, and in such cases strikes out savagely with its terrible claws, at the same time frequently biting its victim. Indeed, Blanford, in his admirable work on the *Mammalia of British India*, considers that there is more danger from the Bear than from the Tiger, which is normally inoffensive to man. As the Bear strikes at the face, the wounds inflicted are ghastly to a degree, and the victim, even if he recovers, is permanently disfigured.

She-bears with young are naturally most prone to attack, as they display the strong attachment to the cubs so usual in the family. There are only two cubs as a rule, usually born in the winter months, and, for some time after they come abroad with her, the female carries them on her back, clinging to the long hair. Naturally they are easy enough to tame when taken young, and they have a better reputation for temper in captivity than have Bears generally.

Their very uncouthness makes them an interesting exhibit, and the beast, known by its Mahratta name of *Aswail*, has long been one of the most familiar denizens of travelling menageries. Except for sport and on account of damage it may do, there is not much inducement to hunt this Bear, but it is pretty eagerly pursued by those who have not opportunities of going after nobler game. It is often captured in India and trained to perform, much as the Brown Bear is in Europe, being led about the streets to show off its acquirements to casual audiences.

As all the other known Bears are black, it will be convenient to mention them here, it being clearly understood that they do not possess any of the Sloth-Bear's peculiarities in form, coat, teeth, or habits, but rather agree in these points with the Brown Bear.

THE HIMALAYAN BEAR

(*Ursus torquatus*)

THIS is the characteristic Bear of the wooded slopes of the Himalayas, the Brown Bear replacing it above the forest-belt, and the Sloth-Bear in the plains. In colour it resembles the latter, being black with a white crescent on the chest, which hue is very constant; but the size varies a great deal, for one may come across specimens seven feet from nose to rump, and others only half this length.

In general habits it resembles the Brown Bear of Europe more than the race of that animal which is its neighbour on the Himalayas, feeding not only on vegetable food, such as walnuts, corn, and wild rhubarb, and pilfering the pumpkins and honey of the villagers, but also attacking their live-stock, such as Cattle and Ponies. Cows attacked by it are horribly mutilated, being practically devoured alive. It is also dangerous to man, who is the more likely to encounter it as it resides within the zone of cultivation.

It bears captivity well, even in the unnatural climate of the plains of India, and it is very amusing when young, but becomes surly and dangerous later on in life.

THE JAPANESE BEAR

(*Ursus japonicus*)

THE Japanese Bear is very similar to the Himalayan, quite a small animal, not being much larger than the biggest Dogs, but very stout and heavy; it is thick-coated, and sometimes entirely black, without any white on the chest. In Yezo, however, the northernmost island of the Japanese group, is found a race of the ordinary Brown Bear.

THE AMERICAN BLACK BEAR

(*Ursus americanus*)

IN its size, thick coat, and black colour, with often some white on the chest, this Bear strikingly resembles the Himalayan, but has a much

narrower head. It is also not constant in colour, being often brown, in which case it is known as the Cinnamon Bear; the brown form is, however, a mere variety, for a brown cub may even be brother to a black one.

It is the characteristic Bear of North America, being much less local than the formidable Grizzly, and maintaining itself even in long-settled districts much better than the Wolf, which animal long survives the Brown Bear in Europe. Like the Brown Bear and Himalayan Bear, it is omnivorous, and much resembles them in its habits; it is seldom dangerous to man.

THE MALAYAN BEAR

(*Ursus malayanus*)

THE Malayan Bear, which is not much larger than a Mastiff, is remarkable for having a short close coat, like a smooth-coated Dog, which shows off to the full its bearish awkwardness of form. Its head is particularly short. The colour is black, with a yellowish white patch of variable size and form on the chest. This Bear, which ranges from the Eastern Himalayas through Malacca to Borneo, is the most active climber of all Bears, and exceedingly amusing in captivity by its playful ways; it is often seen in menageries. It has very little of the carnivore in its tastes for food, being chiefly a vegetarian, with more than the usual love for sweets.

THE SPECTACLED BEAR

(*Ursus ornatus*)

SOUTH AMERICA is not the place in which one would expect to find a Bear, but the present species inhabits the Andes, where it is not very common, and little is known about it. It is a rather small animal for a Bear, and has a moderately thick black coat, enlivened by the white rings round the eyes which give it its name. It has been exhibited at the London Zoological Gardens, but not in recent years.

CALIFORNIAN SEA-LIONS
By C. E. Swan

THE CALIFORNIAN SEA-LION

(*Otaria californiana*)

With this animal we come to that remarkable group of water-carnivores known as the Pinnipedia (fin-footed), comprising the Sea-Lions, Walruses, and Seals proper, all of which are adapted more for swimming than for locomotion on land, their limbs having the basal part very short, while hardly more than the paws project from the trunk. These take the form of flippers or paddles, and in the Sea-Lion are very long and flat, and hairless on the ends and soles. The fore-paw has no claws, and the skin of the fingers and toes projects far beyond their tips. The first toe in the fore-paw is the longest, the length of the other paw diminishing rapidly; while in the hind-paw the two outer toes are much longer and stronger than the three inside ones.

The tail, as in all the pinnipeds, is small and insignificant. Very obvious distinctions between the Sea-Lions and the true Seals are the comparatively long neck of the former and the presence of small external ears, which are wanting in the Seals proper.

The actions of the two groups are also different; in the water the Sea-Lion mainly uses its fore-paws in swimming, the hind-flippers seeming chiefly to come into play in steering; but on land they are turned forward like the hind-feet of an ordinary beast, and assist in supporting the body. The animal also has a true quadruped gait, a sort of awkward gallop, by which it can get along quite rapidly for a short distance, though soon becoming exhausted.

In spite of the awkwardness of its movements, however, it is a good climber, and can get up almost any declivity which a man could ascend, the long rubbery flippers giving a good hold on the ground. But, of course, the creature's proper element is the sea, in which its motions are powerful and graceful to a degree; it darts

through the water with great speed, and can easily spring clean out of it, while it fearlessly takes "headers" from the rocks.

It is not easy to make sure of the colour of this animal, as its short stiff coat is so often seen in a wet state, but in any case there is a good deal of variation, several shades of brown being found, while some specimens are distinctly grey; the female is rather lighter and browner than the male.

But the most remarkable sexual difference is in the size, the males exceeding the females in bulk in this family more than is the case with almost any other beasts; in the present species for instance, the male is seven or eight feet long, and the female less than six. The pups have a soft coat of dark slate-coloured fur; only one is born at a time, and it can see and move about at once, but does not take to the water for some time.

The food of the Sea-Lion consists mostly of fish and other sea animals; but it sometimes captures Gulls in a very cunning manner, by sinking under water and wriggling its nose, which it leaves exposed, till it lures the greedy and inquisitive bird within reach of a spring.

The prey is bolted whole, the pointed grinders of these animals and Seals being unsuited for chewing, but only for keeping a good hold on a slippery morsel. They are extremely voracious, for it has been found that a pair would devour forty pounds of fish daily. Yet they have remarkable powers of fasting, and can go for months at a time without food, sustained by the thick coat of fat or blubber under the skin. They have the peculiar habit of swallowing stones as birds do, but the reason for this practice is not known; probably, as in the case of birds, which these creatures resemble in their habit of swallowing food whole, the stones serve to grind up the food in the stomach.

This Sea-Lion inhabits the western shores of the North Pacific, and is especially well known on the Californian coast, where in some places it is so tame, owing to protection, that it can be studied at close quarters like a tame animal, feeding on the refuse of the fisheries. It is a very noisy animal, uttering a harsh bark or yelp, and the din

produced by the great assemblages which collect in the breeding-season is something appalling. It breeds on the Californian coast from May to August, and after breeding most of the animals disperse in search of food, until only a few remain about their haunts. The males fight previously for the females, and have so much trouble in securing places and keeping their harems together—for they each rejoice in securing as many wives as possible—that they have to dispense with feeding for a time, not being able to get to sea. Their courage is extraordinary, and so is their toughness and endurance—indeed, a herd has been driven over cliffs sixty feet high, and then escaped into the sea after the fall.

Many are destroyed for the sake of their oil, and the hide is also of value. This Sea-Lion, like the group generally, does well in captivity, and is the species usually seen in menageries, where they are a great attraction to visitors, and show much docility and intelligence. On some occasions they have bred. Those in the London Zoological Gardens live in peace with Penguins, although sea-birds form part of their natural prey; but I have seen one amuse itself by teasing a Penguin, pulling it back by the tail whenever it tried to get out of the pond—a proceeding which the bird did not take in very ill part, for when the Sea-Lion tired of its fun, it was in no great hurry to land.

Altogether there are about nine species of the Sea-Lions (*Otariidæ*), and they are very widely distributed, being found in most seas except the North Atlantic and the warm waters of South-Eastern Asia, where no pinnipeds of any sort are found. They are all much alike in general appearance and habits, but differ somewhat in size, voice, and in the character of the coat, though this is not perceptible in the living animal, or indeed in the dead one, without close examination.

About half the species are what are called "Fur-Seals"—that is, they have under the coarse hair, which is all that can be seen externally, the beautifully soft under-fur which is the "sealskin" so familiar as a luxurious article of winter attire. To make the skins suitable for this, all the outer hair has to be removed. The southern species of

Fur-Seals do not provide much of this nowadays, having been severely thinned down by reckless and wasteful destruction, and most of our sealskin comes from the Fur-Seal of the North Pacific (*Otaria ursina*) which breeds on the Pribyloff Islands, where it is carefully watched over and utilised with discretion. Only the "bachelor" Seals are killed for furs; these are the young males which are not old enough to fight for a home and family, for the males of these animals do not come to their full size and strength for several years, and meanwhile have to herd by themselves. These can therefore easily be driven off and knocked on the head, and, though this sounds a barbarous and cold-blooded proceeding, it is kindness compared to what an unhappy bachelor would have to endure if he trespassed upon the "married quarters"; for he would be assailed by each and every paterfamilias he encountered, and, as the Fur-Seal's idea of fighting is to bite and hold on till his teeth tear through, the victim's death would be slow and painful even for such an enduring animal as one of this hardy tribe.

WALRUSES
By C. E. Swan

THE WALRUS

(*Trichechus rosmarus*)

THE huge unwieldy "Horse-Whale," as the old Norsemen called it, is the most remarkable of all the marine carnivores and constitutes by itself a family (*Trichechidæ*) which is to some extent intermediate between the Sea-Lions and the true Seals. The latter it resembles in having no external ears, but in general appearance, in spite of many representations in natural-history books, it is more like the former, especially in the forward disposition of the hind-limbs on land, and the consequent quadrupedal gait. The hind-limbs in the Walrus, however, present the peculiarity of being united at the heels by a web of skin, in which the small tail is enclosed. They resemble those of the true Seals in having the three middle toes shorter than the outside two.

The teeth are quite peculiar, and like those of no other beast. There are no incisors in the lower jaw in adults, and the grinders are small, wide-apart, and round-topped. In the upper jaw there are a pair of small incisors, and the huge canines which form the tusks so characteristic of the beast. The lower canines are small and not conspicuous; in fact, except for the great upper tusks, all the teeth look much alike. In the young there are two pairs of incisors in each jaw.

All the five toes on each foot bear nails, but these are small in the fore-foot, and the skin extends beyond them as in the Sea-Lions; on the hind-foot the three centre claws are larger. The soles of the feet are bare and rough, but with this exception, the skin, which falls much into folds, especially on the shoulders, is covered with short light-brown hair; this, however, tends to disappear in old animals. Under the skin there is, as usual in the sea-beasts, a thick layer of

fat or blubber. The moustaches are formed of very thick bristles as big as crow-quills.

The Walrus is a huge, bulky animal, heavily built, and reaching, in the bull, a length of twelve feet, or even more: an ordinary weight is two thousand pounds. There is not much difference in size between the sexes, and the cow's tusks may be as long as the bull's, but they are more slender, and tend to converge at the tip, whereas the male's are divergent. The length is about a foot, but some exceed this, and they are liable to be shortened by breakage and wear, for the Walrus keeps its tusks well in use; they serve not only as weapons—and the skill with which the beast uses them is remarkable, it being able to strike in almost any direction—but also as grapnels to help to secure a hold when the beast is landing, and as rakes for ploughing up the sea-bottom in search of food.

This food is varied in character, but commonly consists of bottom-living sea animals such as clams and other shellfish, sea-urchins, starfish, sandworms, and so forth. Flesh from the carcases of dead Whales is also devoured, and seaweed is found in the stomach, though there is some doubt as to whether this does not get swallowed accidentally. Possibly this is the case, as the shellfish eaten are often bolted whole, but the evidence on the whole would seem to show that the Walrus is a sort of marine Pig, and will eat practically any organic substance that it can easily obtain.

The Walrus is naturally most at home in the water, and is very clumsy in its movements on shore; there, however, it spends a good deal of time in sleeping or basking. It has enormous strength, and can break holes in ice six inches thick with its tusks; and these are freely used on its fellows, for, although sociable, it is a pugnacious beast. When a herd of Walruses is lying for the most part asleep, on an ice-floe or rock, some are always kept on the alert by the practice each one has, when waking, of dealing his neighbour a dig with his tusks, the unfortunate recipient of course awaking, and passing on the kind attention. They have, however, much real attachment to each other, and are dangerous when hunted in the water, not only

because the injured animal will turn and attack its persecutors, but also because its friends will make common cause with it. It may be easily imagined that the assault of a herd of these brutes is a serious thing for a party in a boat, which may easily be pulled over or stove in by the tusks of the furious animals.

The Walrus is credited with being, unlike the Sea-Lion, the husband of only one wife; but some cast doubts on his fidelity. It is universally agreed, however, that the female has great affection for her single cub; this is born in spring on the ice, and appears to be suckled up to two years old, at which age the tusks begin to appear. It is carried about a great deal on the back of the mother, who does her best to guard it against the attacks of the Grampus or Killer-whale. The only other natural enemy at all important for the Walrus is the Polar Bear, and even he would find a full-grown beast rather too much for him.

The note of the Walrus is a curious one, somewhat between a bark and a bellow; it also grunts and snorts. The Eskimo name, "Awuk," is supposed to give some idea of the cry.

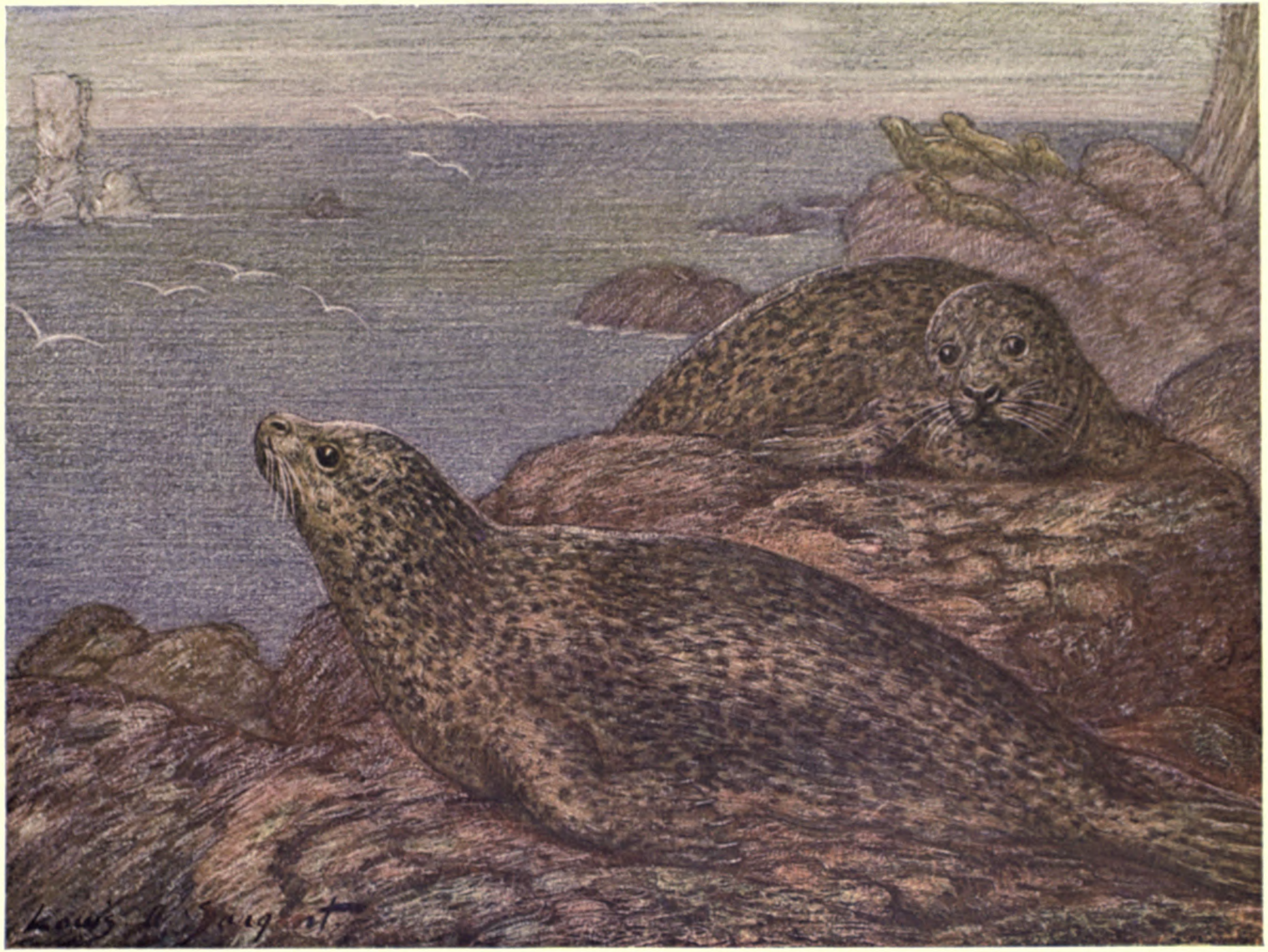
The Walrus is a purely Northern animal, found all round the world, but chiefly in the high latitudes where ice is constantly present; it is one of the most characteristic forms of the Arctic regions, but seems to have ranged farther south in former times, and to have been driven away by constant persecution at the hands of man. The Walrus of the Pacific (*T. obesus*) is considered distinct from the Atlantic species by some naturalists, but the distinctions between the two do not amount to much. As long ago as 890 A.D., when Ohthere the Norwegian described how he hunted the "Horse-Whales," and brought a tusk to our King Alfred, the Walrus was a valued object of pursuit; and it is a profitable quarry, as its products are various, its fat of course furnishing oil, while its hide is of use for harness-leather, and its tusks furnish good ivory for artificial teeth. Its flesh is also edible, and it furnishes a most important source of support for the Eskimos and other Arctic tribes. Civilised man has, however, pursued the poor animals with such brutal and greedy rapacity that Walrus-

hunting is ceasing to pay as a pursuit. The havoc that has been wantonly wrought among them may be judged of by the fact that in 1852 nine hundred were killed in Spitzbergen on one occasion, only half of which could be utilised. The extinction of this remarkable and useful animal—whose place in nature could not be filled by anything else—would be a standing disgrace to humanity; it would be a good thing, not only to regulate by international agreement its capture in its Northern haunts, but to transport it to the cold Southern seas, where it would probably thrive and become a source of great profit to future generations.

This, however, would be a task of some considerable difficulty, for the Walrus has been seldom brought even as far as Europe in captivity, although so curious an animal would be a great acquisition to any collection. Adults seem never to have been captured alive, but cubs have frequently been taken, and show great affection for their human associates, combined with considerable intelligence. They require soft food, such as the bodies of shellfish, and the intestines of fishes, while they will also eat strips of fish or pork, and porridge or pea-soup.

They are certainly delicate animals, and require much care; the London Zoological Gardens have only exhibited two—one which arrived in 1867, and did not live two months; and later another, which only remained at the Gardens for a few days.

There are few animals more worthy of the attention of such institutions than this, which would vie in attractiveness with the Hippopotamus and Elephant; and while this was passing through the press I was glad to hear that the chief animal-dealer of the world, Herr Hagenbeck of Hamburg, possessed several specimens.



COMMON SEALS
By Louis A. Sargent

THE COMMON SEAL

(*Phoca vitulina*)

THE true Seals are comparatively familiar animals to nature-lovers, the present species being a well-known frequenter of our coasts, while it is a good type of its family, the *Phocidæ*. The body, it will be noticed, is more fish-like than in the Sea-Lion, markedly tapering to the hinder end, while the neck is short. The hind-paws are permanently extended backwards, and have the two outside toes the longest; the short tail appears at their junction, and they are usually kept with the soles facing each other. Thus they work together as a sort of fish-tail, and are the chief propellers in swimming. The fore-paws are more like those of ordinary beasts than are those of the Sea-Lions, not having the skinny extensions of the finger-tips, but strong claws at the ends of all the five fingers. The hind-toes are also provided with claws, and the soles of all the paws are covered with hair.

The absence of the external ear in the Common Seal, though the ear-hole is noticeable, is a ready distinction between the heads of this animal and the Sea-Lion; the teeth of both are formed on much the same type.

The Seal is evidently much more perfectly adapted for marine life than the Sea-Lion; its fish-like body is adapted for giving the greatest effect to the paddling action of the fin-like hind-limbs, which are practically useless on land. When the beast comes ashore, it does indeed drag itself along to some extent by means of its fore-paws, but it chiefly progresses by jerking itself along with contractions of the body-muscles, wriggling on its belly like a huge maggot. It can get along quite rapidly by this very uncomfortable-looking method of progression, but naturally cannot go far without getting exhausted. Thus Seals are found to lie up very near the water as a rule, so that

a few jerks forward send them into it, while most of their life is spent at sea.

The pups, however, are born on land; but in the case of the Common Seal they take to the sea on the very day of birth. This is not the rule, however, with Seals, which generally stay on the land or ice, wherever they are born, for some days or even weeks. They are also usually born with a woolly white coat as baby-clothes.

The infant Common Seal, however, has the same spotted coat as its parents at birth, or very shortly after, but is without spots on the under-parts. As it gets older it becomes more spotted below, if a male, the females never being so much spotted; but, on the whole, there is little sex-difference in size or colour in this animal. A good-sized male will measure about six feet in length, and weigh up to sixteen stone; females run smaller, but not conspicuously so.

The Common Seal has a wide range, being found all round the world in the North, and occasionally entering the Mediterranean, though this sea is the proper domain of the unspotted Monk Seal (*Monachus albiventer*). In our Islands it is not common on the southern English coasts, being too liable to disturbance there, while the shores are unsuitable; but to the northward it becomes more abundant, and is much more familiar in Scotland, the western Islands and the Orkneys and Shetlands being its main haunts in the kingdom. In Ireland it is less common than in Scotland.

It is as sedentary as circumstances will allow, constantly frequenting the same haunts if it is undisturbed and finds the fishing good; but of course its movements are to a large extent governed by those of the fish on which it feeds. In pursuit of these it often ascends rivers to some distance.

The Seal does no harm to man except when it destroys Salmon and breaks the nets set for these fish; and it is of considerable utility in respect of its oil and hide. The latter, like that of all the true Seals, is not provided with the beautiful under-fur which makes "seal-skin," but it has of late been much used for motoring-coats. Generally speaking, there is every reason to protect this harmless and interesting

creature. It is often kept in captivity, in which condition it thrives well, and shows almost as much affection and intelligence as a dog; the exhibition of performing Seals and Sea-Lions at the Hippodrome must be fresh in the minds of many readers of this book.

THE GREY SEAL

(*Halichœrus grypus*)

This is the only other common British Seal, and, though less numerous on the whole, it replaces the ordinary animal in some places, as on the Scilly Islands and parts of the Irish coast. It is much bigger than the Common Seal, reaching a length of eight, nine, or even ten feet, and a weight of over forty stone, in adult males; females grow little longer than Common Seals, but are much heavier. The muzzle in this Seal is longer than in the Common species, and its coat less spotted; in fact many specimens are uniform grey above, and a few males all black. The light grey crown of the head is very characteristic in almost all specimens.

This Seal is wilder and fiercer than the Common Seal, and frequents dangerous and wave-beaten localities; the pup is born with a white woolly coat, and does not change this or take to the water for some weeks. Although found in the northern regions of both worlds, the Grey Seal is not so widely distributed as the Common species.

THE RINGED SEAL

(*Phoca hispida*)

The Ringed Seal, which is only a rare straggler to our coasts, is very similar in appearance to the Common Seal, but considerably smaller, being only about five feet long. It is a characteristically Arctic species, remaining in the high North all the winter, and furnishing an important part of the food of the Eskimos; indeed, it is believed to be the most northern animal inhabitant of the globe. In the winter it makes breathing-holes in the ice, and in spring brings forth its white-clad pup on the floes. The adult males are remarkable for their very strong, unpleasant smell.

THE HARP SEAL

(*Phoca groenlandica*)

The Harp Seal is another Arctic species which visits us occasionally; it is about the size of the Common Seal, and shows a very remarkable colour distinction between the sexes; the male is cream-coloured, with a black face and a broad black band down each side, while the female is grey; she is also considerably smaller than the male.

True Seals of one sort or another are found in most seas, though chiefly in the North and South; there are none in Indian or South African seas, and the West Indian Seal (*Monachus tropicalis*) is all but extinct. The whole group, though differing much in detail, present a great resemblance, if not so alike as the Eared Seals, and here there is only space to mention two more species, each very remarkable in its way.

THE BLADDERNOSE

(*Cystophora cristata*)

Remarkable for the inflatable skin on the nose of the male, the "Hood," as this Seal is often called, is the most noteworthy of the Arctic Seals. Its colour is a marbling of light and dark grey, and it grows larger than the Common Seal. The male is a very brave animal; he not only fights savagely with his rivals in spring, like other Seals, but will turn on man when attacked, and even drag the corpses of his family into the water when they have been killed on the ice, so that, unlike most Seals, he was considered a dangerous animal by sealers until rifles were brought into use against him. Hood-Seals occasionally visit our coasts, but are very rare, and usually come as young specimens, while adults of the others arrive.

THE SEA-ELEPHANT

(*Macrorhinus leoninus*)

The Sea-Elephant is not only the largest of all true Seals, but exceeds all other carnivora, land or water, for it is considerably bigger than the Walrus—a male measuring fifteen feet, and being almost as much in girth; females do not exceed ten feet. The teeth of this huge brute are very small for its size, and it has no nails on the hind flippers; the male is likewise distinguished by a short proboscis, which varies in form, being either limp or dilated; it is about as long proportionately as a Tapir's. The colour of the coat is dark brown in adults, black in the young.

This great Seal used to have a wide range on the coasts and islands of the Southern Ocean, while a Northern race (*M. angustirostris*) inhabited the Californian coasts. The last of the latter, however, seem to have been destroyed at the time of writing, and the typical Southern Sea-Elephants have been so thinned by relentless persecution, for their oil and skins, that they have been exterminated in many of their old haunts, notably the Falkland Islands. This animal, then, is evidently doomed to disappear unless protected in time; and this is the more unfortunate, as it is of high utility, and has never been seen in captivity in Europe. In the Zoological Gardens of Buenos Ayres, however, specimens have been kept.

HEDGEHOG AND YOUNG

By Louis A. Sargent

THE HEDGEHOG

(*Erinaceus europæus*)

The Hedgehog, being so frequently kept in captivity, is perhaps the most familiar member, in Britain at any rate, of the order *Insectivora*—small, insignificant, long-nosed beasts, never bigger than a Rabbit, which are nevertheless found almost all over the world except in the Australian region and most of South America. The general appearance of the Hedgehog is known to every one, but it is worth noting that he has five toes on each foot, and goes about flat-footed like the Bear; and that his teeth are a full set, comprising incisors, canines, and grinders; as usual in the order, the incisors are large and pointed, much like the canines of other animals.

The characteristic spines of the Hedgehog are set in his skin much like pins, the basal ends being thickened into "heads," which lie beneath the skin. Very young animals are nearly white in colour, and have the spines soft and flexible, but those illustrated are about half-grown. The characteristic "rolling himself up" of the Hedgehog is done by the contraction of a powerful superficial muscle covering most of the body; it is that by which the Horse twitches his skin to jerk flies off, and a remnant of it in ourselves enables us to frown—thus, as the Hedgehog's contraction thus begins from the front, it is really "a frightful, fearful, frantic frown." It certainly renders the ordinary enemies of the little beast frantic enough, but some very plucky Terriers will worry him open, and the Fox is said to have dodges of his own for effecting that end.

Unless he meets with a mischance of this kind, the Hedgehog has few enemies except man, who, when he is a gamekeeper, persecutes the creature for its raids on Pheasant chicks, for, although the Hedgehog's usual food consists of snails, slugs, insects, and the like, it will attack anything it can overcome. On the whole, it probably does more

good than harm, for it is not very active, and generally makes its meals on creatures which are better out of the way. Fruit it will also eat, and it is accused of sucking the udders of Cows; this is no doubt a fable, but it has been well pointed out that the little animal would no doubt gladly lick up any drops of milk it might find oozing from the udder of a Cow lying down. Its raids on eggs seem to be confined to those of small birds, as it is apparently, unlike Mongooses, Stoats, and Rats, unable to negotiate large ones like fowl's eggs.

As a general rule, it goes about its business at night, but where unmolested gets on the move long before darkness sets in. In autumn it rolls itself up in a thick bed of leaves, and so sleeps away the winter in its hole, but in exceptional cases it has been found awake and on the move even in time of snow. The young, about half-a-dozen in number, are born in late spring, and there is another litter in early autumn.

The Hedgehog is usually a very quiet animal, but occasionally utters a squealing note, and is said to cry most pitifully when in the grip of some enemy. One used to hear a good deal of its being eaten, roasted in a ball of clay, by Gypsies, but it seems now to have disappeared from their bill of fare—or, at all events, not to be so widely appreciated as formerly.

It is one of the most frequently kept in captivity of all British animals, either simply as a pet, or in order that it may destroy Cockroaches in kitchens and cellars—a very congenial task. It readily eats bread-and-milk, meat, and other soft food, but is a dangerous companion for other animals, if defenceless. Miss W. Austen, whose beautiful work is well known to readers of this book, tells me that she had a Hedgehog which long lived in friendship with a Common Gull (*Larus canus*), but that when the animal died the Gull soon fell a victim to the Hedgehog that succeeded it.

Hedgehogs closely resembling our own species are found in Europe, Africa, and Asia, and to the same family are assigned the Rat-Shrew (*Gymnura*), which has the body, hairy coat, and long tail of a Rat, with a Hedgehog's head. This animal comes from the East

Indies, from Malacca to Borneo, as does the Small Rat-Shrew (*Hylomys suillus*), which is hardly bigger than a Mouse, and has a short tail.

THE MOLE

(*Talpa europæa*)

Although, by reason of his subterranean life, he is comparatively seldom seen, the Mole is a much more numerous animal than the Hedgehog, and most people recognise the little sausage-shaped, pig-snouted body, with the plush-like grey fur, at first sight. The eyes of the Mole are very small and hard to find, and there is some dispute as to how much he can see; but in any case sight cannot be of much importance to Moles, as some foreign species are undoubtedly blind. There is also no external ear in the Mole, but that need not affect his hearing much. Although his fore-legs are extraordinarily short, with broad paws carrying five well-developed fingers with long digging claws, his hind-feet are not noticeably peculiar in structure, though with the same number of toes; the tail is short and insignificant, and some foreign Moles have it even shorter.

The teeth of the Mole, having small incisors and large upper canines, rather remind one of those of the carnivora; and, for his size, he is as fierce a carnivore as any, not by any means confining his repasts to his proper prey of the worms and grubs he hunts for underground, but ravenously devouring Mice, Birds, or Frogs, if he is lucky enough to capture such creatures. His own species is not exempt, if slain in a fight—a fairly likely occurrence, for Moles fight savagely when they meet. They are, in fact, strenuous livers in every way; they work as hard as they eat and fight, and they have need to do so, for a fast of a few hours is fatal to them.

The male Mole shows considerable affection for his mate, and the young are carefully looked after; they are born naked and helpless, and lie in an underground nest lined with dry grass. The elaborate galleries of the castle depicted in books as the Mole's fortress are, however, apparently simply the result of work on the mound and nest. Awkward as the Mole appears on the surface, he can travel at a fair pace, and is a bold and fearless swimmer on occasion; he works all the year round, merely going deeper when frost drives the worms down. One curious thing about the creature is its great variability in colour, which, after all, is probably simply the natural result of an underground life, this making it possible for off-coloured specimens to survive; at any rate, black, yellow, white, and more rarely pied varieties are recorded.

Our Mole is not found in Ireland, but extends all across the Old World from England to Japan, and other species of the family are (*Talpidæ*) likewise found in the northern parts of the world.

THE STAR-NOSED MOLE

(*Condylura cristata*)

This is the most remarkable of the American Moles; it has a long, stout hairy tail, very unlike that of our species, and its snout is tipped by a curious star-shaped appendage, consisting of a ring of fleshy tentacles; these are almost imperceptible in the newly-born animal. The Star-nosed Mole is the most aquatic of the true Moles, burrowing habitually in wet soil by the water-side, and often below the water-level, while it takes to the water freely, and dives as well as swims. The common Mole of North America (*Scalops aquaticus*), although it has webbed hind-feet, does not care about water, and rather affects dry soils.

THE DESMAN

(*Myogale moschata*)

This creature, although referred to the same family as the Mole, and bearing some resemblance to it in the smallness of the eyes and ears and shortness of the limbs, is adapted to an aquatic life rather than to one beneath the soil. It is large for an insectivore, the body being about ten inches long, while the tail is about six inches more, stout, scaly, and flattened at the side. The fore-paws are of ordinary form, not adapted for digging as in Moles, and the hind-paws are specially suited for swimming, being long and webbed.

The nose of the animal projects far beyond the mouth, like a short trunk, and is very flexible. The coat resembles that of the Otter, having a soft under-fur and long outer hairs, and, as it is appreciated as a fur, the creature is a good deal persecuted in consequence.

The Desman lives in South-Eastern Russia, making burrows in the banks of lakes and streams, and hunting in the water for the insects and other aquatic creatures on which it lives. It has only one near relative, the Pyrenean Desman (*M. pyrenaica*), a much smaller animal, with a proportionately longer nose, and the tail rounded instead of flattened.

GOLDEN-TAILED TUPAIA

By Louis A. Sargent

THE GOLDEN-TAILED TUPAIA

(*Tupaia chrysura*)

In the warm climates of South-East Asia, from Southern India to the Philippines, are found a number of insectivores, the family *Tupaiidæ*, which present a remarkable resemblance to the Squirrels among the Rodents. Indeed the Malays have but one name for these two groups "Tupai," whence the scientific name of the typical genus is derived. The Golden-Tailed species is hardly more than a local race of the Tana (*Tupaia tana*), which ranges through Borneo and Sumatra. The more ordinary colour of the typical form is a plain dark brown on both body and tail. The Tana is the largest of the Tupaias, being about ten inches long without the tail.

These little animals, although so like Squirrels in general aspect, are distinguished by having the usual long snout of the insectivores; and if the teeth are examined, it will be seen that, unlike any rodents, they have canines, and more than one pair of incisors in each jaw. The eyes are large, as in Squirrels, not minute as in insectivores generally; but the ears are very small, and not unlike the human ear in shape.

In general habits they are very squirrel-like; they are creatures of the day, and very lively and nimble in their movements, both on the ground and on trees. They have the Squirrel's habit of holding their food in their fore-paws; but in the nature of that food they are true in great part to the traditions of their order, living mostly on insects, though they also readily eat fruit. The Malayan species (*T. ferruginea*) is a familiar little animal; when, in the rainy season, it finds things uncomfortably damp outside, it comes into houses, and makes itself at home. I once kept a specimen of the Madras Tree-Shrew (*T. ellioti*) in Calcutta, and found it an interesting pet. It exhibited keen discrimination in the matter of the insects it ate, always refusing "warningly-coloured"

butterflies; in this it showed itself more discriminating than most birds I experimented with, these usually eating the "warningly-coloured" kinds unless other butterflies were offered as well. As, however, the Tupaia always smelt the butterflies before eating them, it evidently was not impressed by the colour. This specimen lived peaceably with a tame Dove, but Tupaias are said to eat the young of birds in the wild state. Although they are such nice little animals, they are seldom seen in captivity; only two species have been exhibited at the London Zoological Gardens, and those a good many years ago.

THE SHREWS

THE Shrews (*Soricidæ*) are the most widely distributed and numerous family of the Insectivora; they are closely related to the Moles, but in appearance closely resemble the Mice among the rodents, just as the Tupaias do the Squirrels. In fact, they are often called Shrew-Mice, but a Shrew can always be distinguished from a Mouse by its long nose, minute eyes, which are hardly noticeable, and by the presence of canine teeth. Shrews live upon the ground, and feed on insects and such small prey; they are ravenous and ferocious little creatures, and will fight to the death at times. We have three species of them in Great Britain.

THE COMMON SHREW

(*Sorex araneus*)

THIS little creature resembles a Mouse in colour as well as in size, being brown; it is the best known of our species, and very widely distributed, being found all round the world in the North, in Europe, Asia, and North America. With us, however, it displays one curious limitation in its distribution—it is not found in Ireland. It is active both by day and night, and subject to some unknown cause of mortality in autumn, when many are found lying about dead.

THE PIGMY SHREW

(*Sorex minutus*)

THE Pigmy Shrew is a pigmy indeed, being less than half the size of the Common Shrew, but very similar in colour. It is not found in the New World, but is as widely distributed as the Common Shrew in Europe and Asia, and is found in Ireland as well as in Great Britain, though it is not so common in the latter country as the Common Shrew.

THE WATER SHREW

(*Neomys fodiens*)

THE Water Shrew is the largest of our Shrews, being considerably bigger than the Common Shrew; it is also more strikingly coloured, being jet-black above and usually pure white below, though some are grey there. Although it is amphibious in habits, it is not web-footed. It lives by the side of still clear water, and feeds on any insects, fish-spawn, and such like small articles of animal food it may procure. Its habits are exceedingly active and playful. It is not found in Ireland, but ranges from England east to the Altai Mountains.

THE MUSK SHREW

(*Crocidura cœrulescens*)

I SAID that the Hedgehog was the most familiar insectivore in the sense of being a common British animal often kept as a pet; but the most really familiar in its habits is the Musk Shrew, the well-known "Musk-Rat" of the East, for it is habitually found in and about houses. It is the biggest of the true Shrews, about equalling a Mole in size, and of a peculiar blue-grey colour. All Anglo-Indians are familiar with the chittering cry of the little beast as it prowls about at night along the walls in search of cockroaches; it is really a useful creature, and any attempt to disturb it makes it emit a most objectionable musky smell from certain glands on its sides. Our ordinary Shrews have these glands, and possibly their secretion is what prevents Dogs and Cats from eating Shrews, though they are consumed by Owls. The Musk Shrew is the only species which has been exhibited in the London Zoological Gardens.

THE ELEPHANT SHREW

THIS family (*Macroscelididæ*) is confined to Africa, and contains a number of curious little animals, about the size of Rats, with peculiarly narrow snouts, large eyes and ears, and long hind-legs, on which they jump about; here, then, is another parallelism with rodents, the Jerboas being well-known jumpers in that order. Their food consists of insects; they have been kept in captivity, but I have never heard of any being brought to England.

THE OTTER SHREW

(*Potamogale velox*)

THE Otter Shrew is a very curious beast discovered in West Africa by Du Chaillu, and having a family all to itself (*Potamogalidæ*). It is one of the largest of

Insectivora, being nearly two feet long; but about half of this is taken up by the tail, which is flattened at the sides and very powerful; the body passes into it gradually as in a Lizard. The muzzle is broad as in the Otter, and the fur similar; the eyes are very small, the paws are small and not webbed, and the animal's very rapid swimming seems to be effected entirely by the tail. It feeds on fish, and has never been brought to Europe alive.

THE TENREC

(*Centetes ecaudatus*)

The Common Tenrec, which is far the best known of its family (*Centetidæ*), is not unlike a Hedgehog, but with a longer muzzle, and coarse bristly light-brown hair instead of spines; it has no tail at all, though some members of the family have long ones. The male Common Tenrecs are remarkable for the large size of their canines, and the females for their great fertility, which exceeds that of all other beasts, as they may have more than twenty young in a litter. All the Tenrec family are confined naturally to Madagascar, but the Common species, being much esteemed as an article of food, has been introduced elsewhere. It feeds, itself, on small prey like the Hedgehog, and is easily kept; it has been exhibited in recent years at the London Zoological Gardens.

THE ALMIQUI

(*Solenodon cubanus*)

The Almiqui of Cuba is the sole representative of its family (*Solenodontidæ*), and is remarkable for its occurrence in the West Indies, quite out of the range of the Insectivora in general. In appearance it is more like a gigantic Shrew than anything else; it is about as large as a small Rabbit, and is white on the head and shoulders and dark behind; the fore-claws are very large and powerful.

THE GOLDEN MOLES

The few species of Golden Moles (*Chrysochloridæ*) are confined to South Africa, and, though resembling the true Moles in general form and habits, differ remarkably in some points, chiefly in the structure of the fore-feet, which, though as well adapted for burrowing as those of the Common Mole, are formed on a different plan; they have only four toes, the outer being absent, and all the toes are insignificant except the third, which bears an enormous claw, making up the most efficient part of the foot. Their fur is remarkable for its beautiful metallic lustre of green-bronze and copper, and furnishes a curious case of beauty which cannot be appreciated by its owners, as, in addition to having subterranean habits, the Golden Moles are quite blind.

COBEGO
By Winifred Austen

THE COBEGO

(*Galeopithecus volans*)

THE Cobego, Colugo, Kubong, or Kaguan—for this nondescript creature rejoices in a variety of names as queer as its appearance—is usually classed with the Insectivora, mainly, to all appearances, because it will not fit in comfortably anywhere else in the natural system. The English and scientific names given to it express this puzzle as to its attributes—it has been called a Flying Lemur, though it certainly is not a Lemur, and does not fly in the proper sense of the word—and the scientific title (*Galeopithecus*) means Marten-Monkey, though, whatever it may be, it is neither Monkey nor Marten.

What it really is like in general appearance may be gathered from the illustration; in size it about equals a small Cat, and is a slim-bodied, long-limbed animal. The paws are five-toed on both fore- and hind-feet, with the length of the toes increasing from the inner to the outer, and all of them armed with sharp curved claws. All the toes are fully webbed—a quite unique character in a land animal.

Perhaps the most remarkable peculiarity about the animal's general form is the parachute, by which it executes its so-called flights. This is an extension of the skin, which reaches from the lower jaw, on each side, to the fore-paw, and runs on from the fore-paws to the hind-paws. From the hind-paws it is continued to the tip of the tail, which is thus entirely enclosed in it like the body; it is long, and has some prehensile power. Thus the creature's body, limbs, and tail form the centre framework of a skinny web, a sort of animated kite. The fur, which clothes uniformly both the body and the skin-extension, is beautifully soft, like that of the Chinchilla, and is variable in colour, but always of some sober shade, olive, brown, or drab, with a mottling of whitish spots; below, it is of a brownish-grey shade.

But the peculiarities of the Cobego do not end with its general form; it has a most remarkable set of teeth, unlike those of any other creature whatever. The incisors are four in number in the upper jaw, the two inner widely separated, and notched on the crowns, the outer pair pointed. In the lower jaw there are six incisors with broad tops, notched in all of them; in the centre two pairs these notches are so deep and so numerous that these teeth look like little combs, and are utterly unlike the teeth of any other animal. Canines and grinders are present in both jaws, the latter being five on each side of each jaw.

Internally, the animal is remarkable for the small size of its brain and the large cæcum of the intestine, which equals the stomach in size, though this is not small. There are two pairs of teats in the female, situated near the armpits, and her breast is bare; the young animal, of which there is only one at a time, is very small at birth, and both naked and blind, spending its time clinging closely to the breast of its mother.

This animal is a characteristic denizen of the East Indies; it ranges from the Malay Peninsula through the islands to Borneo—and even to the Philippines, unless the form found there (*G. philippinensis*) is reckoned as distinct; the differences between the two are not very great however, and they are undoubtedly closely related. It is smaller and shorter-headed than the better-known Western form, and the teeth differ in some small particulars.

Cobegos are purely arboreal in their habits, and nocturnal; by day they remain clinging to the boughs—according to some observers, with the hind-feet only, like Bats, though it is more probable that all four feet are employed. They are not always easy to detect in the daytime, as their mottled fur gives much the effect of bark, and assimilates them to their surroundings—although it must be admitted that Moseley, in his "Naturalist on the 'Challenger,'" says of an individual of the Philippine form that he met with, that it was easier to see than he had expected. When disturbed during the day, they hitch themselves up the trunks of the trees by a succession of short jumps.

At the approach of nightfall the animal becomes active; it then exercises its peculiar power of making long leaps from one tree to another, supported by the skin-parachute with which it is provided. Dr. A. R. Wallace, in Sumatra, where he found the animal quite common, saw one clear a distance from one tree to another which he estimated at seventy yards. In this long distance the animal descended only about twelve yards or so, alighting near the foot of the tree aimed at. Dr. Wallace considers that the creature must be able to steer itself to some extent, otherwise in so long a flight it might very easily miss the goal it was making for.

According to Horsfield, if it does find itself forced to the ground, it travels by "slight awkward leaps," till it finds something up which it can climb. The same writer, who observed it in Java, mentions that it makes its presence known by a croaking, hoarse, disagreeable noise. He states that it is especially found on low hills abounding with young luxuriant trees growing in a fertile soil; it lives entirely on young fruits and leaves, especially those of the cocoanut tree and of *Bombax pentandrum;* in this way it does a good deal of damage in plantations. Dr. Wallace also says the Cobego chiefly lives on leaves, but it has also been said to feed on insects and small birds, in addition to the leaf and fruit diet. This is very likely, as few tree-haunting animals are pure vegetarians, from our poor relations the Monkeys downwards.

This curious animal is remarkably tenacious of life, and hard to destroy by any ordinary means. It is said to be very gentle, and not to attempt defence when captured. Besides being appreciated as food in some parts of its habitat, the animal furnishes a fur which has some value—locally at any rate, since Moseley found skins of the Philippine form selling at Zebu, near the island of Bojol, north of Mindanao, on which these animals were very abundant, at five dollars a dozen.

One would have thought that so curious an animal as this, and, besides, no rarity in its own haunts, and to all appearances easily accommodated with food, would have been long ago brought alive to

Europe and exhibited in our Zoological Gardens; but I have never seen it in any menagerie or in the possession of any dealer.

The great interest of the animal, of course, lies in the fact that it seems to give us some idea of the way in which the Bats were evolved, though it certainly is not in the direct line of descent of those animals, having too many peculiarities of its own, such as the webbed hind-feet and the remarkable teeth. It does, however, show the parachute-membrane in a more perfect form than any other creature of the kind, and parachutic animals occur in two or three other groups, not necessarily nearly allied, in two distinct families of Squirrels, and among the marsupials. None of these, however, have the webbed fore-paws and the tail completely included in the parachute-skin, which are the peculiarly bat-like points of the Cobego.

INDIAN FLYING FOXES

By Winifred Austen

THE INDIAN FLYING-FOX

(*Pteropus medius*)

THE order of Bats, known scientifically as *Chiroptera*—hand-winged animals, their wings being simply the webbing between immensely-elongated fingers, continued along the sides of the body—is divided into the *Megachiroptera* or Big Bats, and the *Microchiroptera* or Little Bats. To the latter division belong the Bats we are accustomed to see, and many other types found all over the world except in the Arctic and Antarctic regions, but the former only includes the family of Flying-Foxes (*Pteropodidæ*), fruit-eating Bats found in the warm regions of the Old World, from Egypt to Australia and the Pacific.

Of these the Indian Flying-Fox is a good example, and is the best known, being a very familiar creature in India, and often seen in menageries in other countries. It is one of the largest of Bats, measuring about four feet across the expanded wings, though the body is considerably less than a foot in length; there is no tail, and the skin which in ordinary Bats is found between the hind-legs, enclosing that member, is in the Flying-Fox confined to a flap along the inside of each leg. The toes are armed with powerful claws, and the thumb, which, as in all Bats, takes no part in the formation of the wing, and has to do duty for a whole paw, is also powerfully clawed. There is a minute claw also on the forefinger, and this little claw is one of the distinctive points of the Flying-Foxes, being found in nearly all of them, while in the other Bats it is absent. The ears, too, in the Flying-Fox, although of very ordinary form, are notable for having the margin of each joined at the base, a peculiarity not found in the other Bat families, with all their eccentricities in the way of ears.

The head, as the illustration shows, is singularly like that of a Fox in miniature, and the small incisors and large canines add to the resemblance to a carnivore; but the grinders are noticeable for their grooved

crowns, adapted for munching fruit. The eyes are distinctly large, and this is another point which separates the Flying-Foxes, which have good sight, from most other Bats, which have very small eyes, and rely for finding their way and their food more upon their sensitive wings, which can detect the smallest air-current or change of temperature, so that they really feel their way about.

In colour the Flying-Fox varies considerably, some being much blacker than those depicted, especially on the abdomen. The flight of the Flying-Fox is as different from the Bats one usually sees as is its general appearance; it travels slowly by steady uninterrupted sweeps of its great wings, like a large bird, from which it is hard to distinguish if seen "end on." When about to alight, it sails and wheels on motionless down-bent wings, and, on pitching in a tree, shows itself fairly active on foot, either walking along the boughs upside down with the thumbs and feet, or even by means of the feet alone, as in the ordinary resting-position represented. When in complete repose it hangs by one foot only, wrapped up in its wings, with the head tucked in on the breast.

It is a quarrelsome, ill-conditioned brute, biting savagely, and scratching its foe with the great claws of the thumbs; on such occasions it shrieks and cackles in a way which reminds one of an infuriated Monkey. Its claws come in handy in feeding as well as fighting; sometimes it holds a fruit between the thumb and the adjacent part of the wing, or it may employ its toe-nails as a fork, bending the leg forward to hold the food against its body, the legs having remarkable freedom of action. The food thus secured, the Bat gluttonously gulps it down in great mouthfuls, for, like so many fruit-eating creatures, it is intensely greedy. This is presumably the result of its comparatively slight digestive power, for the fruit passes through the body of the beast in a very slightly altered condition, a peculiarity also notable in many fruit-eating birds.

Flying-Foxes begin to fly out for food at twilight, not in flocks, but one after another in a casual way. They probably often traverse great distances, for their flight is very enduring, one having once been

taken at sea 200 miles from land. Their ordinary food is wild fruit, almonds, and so forth, but when they get the chance they fall greedily upon orchards, devouring any sort of cultivated fruit except the orange tribe. They drink in captivity, so, no doubt, when in the wild state they are seen, as they often are, to sweep down and touch water, they are taking a sip on the wing.

At dawn they come back to the roosting-trees, for this species, like so many Fruit-Bats, only roosts in trees, and, as a great number roost together, their quarrelsome disposition leads to hours of skirmishing before they at last get sleepy and resign themselves to a day's rest.

Sometimes they drink the sap of the palms collected in the vessels hung up by the toddy-makers, and if this has fermented they get uproariously drunk, some being forced to rest at times helpless beneath the palms—lucky, no doubt, if some Jackal does not find them before they have recovered from the results of their intemperance. Considering the rowdy propensities of the Flying-Fox when sober, the arrival of an inebriated party at the "battery"—if one may coin such an expression for the roosting-tree—ought to be a sight worth seeing.

As is the general rule with Bats, the Flying-Fox has but one young one at a birth, which clings to the breast of its dam for a couple of months; it is usually born in the spring. In spite of this slow increase, the animal is very numerous in India, and their long trains crossing the sky at dusk are as familiar in Calcutta as the Rooks in England. The Flying-Fox is, however, a long-lived animal, having been known to reach twenty years of age in captivity, and seems to have no particular enemies, so that its abundance is not inexplicable. Owing to its ravages on fruit, it is one of the standing nuisances of the country, and certainly needs thinning down, though it would be a pity to exterminate so picturesque a creature. It has also some direct utility, being relished as food by the Goanese half-caste Portuguese, and by certain low Hindoo castes, in spite of its rank musky smell.

Numbers are caught alive for export as menagerie specimens, and, as might be inferred from what has been said above, they bear captivity well. They may often be obtained from our London dealers.

This species cannot, however, compare in aptitude for cage-life with the Collared Fruit-Bat of Africa (*Cynonycteris collaris*), a rather smaller species with a rudimentary tail, which bred freely, generation after generation, in the London Zoological Gardens, though the specimens were confined in cages so narrow that flight was impossible. This Bat is a cave-haunter, and does not roost in trees by day.

There are a considerable number of species of these Old World fruit-eating Bats, much alike in general habits, but varying considerably in size, from the Kalong (*Pteropus edulis*) of Malacca and the East Indies, which measures five feet across the wings, down to the little Long-tongued Fruit-Bat (*Carponycteris minima*), which is smaller than our Noctule or Great Bat, for the *Megachiroptera*, although they average considerably larger than the other section, are not always so. The Long-tongued Fruit-Bats have the tongue not only long and extensible, but furnished with a kind of brush at the tip, very suitable for licking out the soft pulp of fruit. Big or small, the Fruit-Bats are the bane of fruit-growers in the East, and the American Government is so afraid of these pests getting a footing in the Western world, that their importation into the United States is not allowed, and any one who comes ashore with a live Flying-Fox has the mortification of seeing his pet incontinently executed.

VAMPIRES
By C. E. Swan

THE VAMPIRE

(*Desmodus rufus*)

Of all the numerous tribes of small Bats, mostly insectivorous in habits, the South American Vampire has the greatest notoriety, owing to its ghoulish habit of living on blood sucked from other animals. For many years, however, it was known that there were blood-sucking Bats in the warm regions of America before the habit was definitely brought home by Darwin to *Desmodus rufus;* and many innocent Bats had the injurious suspicion fixed upon them, notably *Vampyrus spectrum*, a big ugly Bat about two feet across the wings, which is now known to be a fruit-eater, like the Flying-Foxes of the Old World. The true Vampire is a quite ordinary-looking Bat as far as outward appearances go, as the illustration shows; all that is noticeable is that it agrees with the Oriental Fruit-Bats, and differs from most *Microchiroptera* in having the membrane between the hind-legs little developed, and being almost tailless.

Its teeth, however, are very remarkable, and show its complete adaptation for a blood-sucking existence. The incisors, which are usually small in Bats, are in the Vampire very large and sharp, and the molars, which in insectivorous Bats are studded with sharp points for crushing their prey, are in the Vampire small and few, being practically of no importance to an animal whose food is liquid. Moreover, the stomach of the Vampire is much elongated, like a cæcum or blind-gut, so that it can contain a large quantity of blood to be digested at leisure.

The sharpness of the incisors enables the Vampire to shave off, as it were, a small portion of the skin of its victim, and thus wound a number of capillary blood-vessels without giving pain, while causing a free flow of blood. Thus the victim, if asleep, is not awakened, and a case has even been reported in which a Vampire was found

to be sucking blood from the toe of a man who was calmly engaged in conversation at the time.

The toes in man are usually the point attacked; Horses are bitten on the withers, and Fowls on the comb or the hocks. The attack is, of course, serious in the case of animals so small as poultry, nor is it without much inconvenience in the case of man and large domestic animals: a vampire-bitten big toe is apt to bleed for some time and give trouble when boots are worn, and bites on a Horse interfere with the saddling of the animal. Moreover, the loss of blood is not to be despised, especially in the case of individuals for whom the Bats show a special predilection, for, like blood-sucking insects, they have their preferences.

They are said to be afraid of light, so that a lamp kept burning in a stable is a good protection to Horses, and another preventive is found in thorny bushes hung up above the animals' backs, near which the Bats are afraid to venture for fear of tearing their wings. One would think that wire-netting in the windows and doors would be the simplest protection of all.

So far as structural evidence goes, there are only two other species of Bats, both also South American, which are blood-suckers by profession, so to speak; but it is not impossible that other species may attempt the practice in an amateur way, though it would be difficult for a Bat with the ordinary small incisors and long sharp canines to inflict a bite that would not wake the object of its attentions.

The whole of the Vampire family are confined to South America, most of them being fruit-eaters, and being peculiar in this habit among the "Small Bats"; some have the same long brush-tipped tongue that is found among some Flying-Foxes, and even show a lengthened muzzle like them. Most Vampires, however, are short-faced, like ordinary Bats, and have the curious flat fleshy appendage on the nose so often found in the *Microchiroptera*, and known as the "nose-leaf."

THE INDIAN VAMPIRE

(*Megaderma lyra*)

This belongs to a different family from the true American Vampires, but is also a blood-sucker, though it goes about its business in a different way. It is a fairly large Bat, bigger than any British species, with a small nose-leaf, fairly large eyes, and enormous ears, joined to each other at the base. Its fur is of a peculiar blue-grey colour. This animal, which is common in India and Burma, preys on other Bats of smaller size than itself, on small birds, and on Frogs, sucking the blood of its victims, and eating up their flesh and even many of the bones, for it has great power of jaw and very strong teeth; it appears never to attack large animals. It has a gruesome habit of bringing its prey into houses to eat it—perhaps to escape being robbed of it by Owls—so that fragments of its victims, especially the hind-quarters, may often be found in bungalows near its haunts. I have kept this animal in captivity in India, and it has been brought to England, but never exhibited in the Zoological Gardens, any more than the true Vampire. There are other species of *Megaderma* found in Africa and Australia, all probably with similar carnivorous habits.

THE FISHING BAT

(*Noctilio leporinus*)

It is hardly worth while here to detail the characteristics of the different families of insectivorous Bats, but some species, like the above, need mention on account of peculiarities in habit or form. That a Bat should catch fish is so remarkable a fact that it deserves notice, but the present animal habitually gets its food in this way, haunting either fresh water or the sea, and snatching up its prey with its feet, which are unusually large for a Bat and furnished with correspondingly large claws. The teeth have much the appearance of those of a rodent, there being two large incisors in the upper jaw, concealing a small pair behind them, and only one pair in the lower jaw. This is a large species for the group of Bats to which it belongs, being as big as some of the smaller Fruit-Bats.

THE RAT-TAILED BAT

(*Rhinopoma microphylum*)

In most Bats, except the Fruit-Bats and blood-sucking Vampires, the tail is of considerable length, but not very noticeable, because it is usually included in the membrane stretching between the hind-legs. In one family (*Emballonuridæ*), however, to which the present and the last species belong, it protrudes outside or beyond this skin. In the Rat-Tailed Bat, which is a small delicately-formed species, the tail is as long in proportion as a Mouse's, and the membrane between the legs, being

very short, is quite as conspicuous as the tail in most animals. The creature seems to have the ordinary habits of an insectivorous Bat; it is found from Egypt to Burma, and especially haunts tombs and ruins.

THE PIPISTRELLE

(*Vesperugo pipistrellus*)

Our common British Bats belong to a family (*Vespertilionidæ*) which is the most widely spread of all, and has no very striking peculiarities. The commonest in England is the above species, usually known as the "Flittermouse," and familiar to every one, as it is found even in towns, and flies low, and not unfrequently is abroad by day; while, though it hibernates, like all insectivorous Bats in Temperate countries, it retires late and comes out early, even appearing on fine days in winter. It is a small brown Bat, with no noticeable peculiarity about muzzle or ears. Its food is Gnats and such small insects, and it usually roosts by day in buildings. It is found all over Europe, North Africa, and east to Cashmere, but it is not the "Common Bat" of the Continent, that being *Vespertilio murinus*, a species rather bigger even than our Noctule Bat.

THE NOCTULE

(*Vesperugo noctula*)

The Noctule is the biggest Bat one is likely to see in England, and is nearly twice as big as the little Pipistrelle; it is also much brighter in colour, being of a light chestnut, but it has a rank unpleasant smell. This big Bat usually retires for the day into hollow trees, though sometimes found under eaves; it usually flies high, and feeds by preference on large insects like Cockchafers and other beetles. It is found over a large part of the Old World, Europe, North Africa, and Asia, and even Java and Sumatra, though not India proper.

THE LONG-EARED BAT

(*Plecotus auritus*)

There are a good many British Bats, but it is only possible here to allude to the three most conspicuous species, of which the present is certainly one, for, although a little creature like the Pipistrelle, it rejoices in the largest ears, for its size, of any known animal, except its near ally the American Long-Eared Bat (*P. macrotis*). These ears, which are three-quarters the length of the body, can be both bent and folded, and are usually stowed away under the wings when the Bat hangs itself up to rest. The Long-Eared Bat is a widely-spread species in England—I have known one captured even in London—and also has a wide range abroad, from Europe and North Africa to the Himalayas.

BEAVER

By Louis A. Sargent

THE BEAVER

(*Castor fiber*)

With the exception of the Capybara of South America, presently to be noticed, the Beaver is the largest of the Rodents, and in some respects a good type of that order of beasts, notably in its short deep muzzle, in the large size of the hind-limbs as compared with the fore, and in the teeth, which, as in Rodents generally, are remarkable for the complete absence of canines and the presence in each jaw of two huge chisel-tipped, continually-growing incisors, with which the gnawing is effected. These teeth are kept sharp by being faced with enamel only on the fronts, so that they wear away more from behind, keeping the anterior portion at an edge. The grinders are broad and flat, adapted for the chewing of vegetable food. The structure of the feet, in which the front pair are small and practically unwebbed, and the hind pair large and fully webbed, is similar to that found in several other aquatic rodents, and the number of toes, five on each foot, is usual in the Rodent order; but the Beaver has a remarkable peculiarity in possessing a double claw on the second toe of the hind-foot, which is used for scratching or combing the fur.

The tail is also quite a peculiarity of the Beavers, no other beast having a similar one. It is broad and flat, and oval in form, hairy only at the root, and covered for the rest of its surface with a scaly-looking skin. It is of considerable use in swimming, especially in helping the animal to rise for air, and in sending him down for a dive, when the loud smack it makes warns all other Beavers for some distance. The ordinary agents in swimming are, however, the webbed hind-feet, the fore-feet being tucked up and not used at all in the water. As in the case of so many aquatic animals, the Beaver's fur is of two kinds, the long coarse hair which alone shows on the surface, and the soft close under-coat, which is the fur for which the animal is famous. The

general colour of the Beaver is brown, as shown in the illustration, but, especially towards its Northern limit in America, black specimens occur, and, rarely, white or pied individuals are found. In size the Beaver equals a fair-sized Dog, weighing about thirty pounds, though specimens much heavier than this are met with.

It is found in the Northern Hemisphere all round the world, though the American race presents, as a rule, certain slight differences in the form of the skull, which have caused some authors to rank it as a distinct species. In Europe and Northern Asia the Beaver is a rare and very local animal, and comparatively little known, though the ancients were acquainted with it as the producer of the drug castoreum, which is contained in two pouches situated under the skin and muscles beneath the tail. They do not, however, seem to have been acquainted with the wonderful architectural and engineering instincts of the animal, and, indeed, these are seldom manifested in Europe, where the animals usually live in holes in the banks of streams like Water-rats, and have only been known in a few cases to build the dams and houses which have long been so familiar as the handiwork of the American race.

Beavers inhabited Britain in historical times, and lingered in the river Teify, in Wales, well into the Middle Ages, and they may still be found on the Rhone, the Elbe, and in Norway, to say nothing of remoter localities farther to the East. In America they used to range from the shores of Hudson's Bay to the Gulf of Mexico, but they were early exterminated from the more settled parts of the country, and have everywhere been much reduced in numbers. The country they affect is well-wooded land with plenty of water, and thus they have always had a stronghold in the great forests of the North. On the shores of large bodies of water they merely burrow in the banks, and it is chiefly in small streams that they display their remarkable instincts. Although most at home in the water, they obtain most of their food on land, as this consists very largely of the bark and soft wood of trees; and, though they are more active on land than their clumsy shape would lead one to expect, and can inflict very severe

bites, they have little chance to survive among fierce and powerful carnivores like Lynxes, Bears, and especially Gluttons, unless they have deep water available to retire to. Thus it is that they are led to construct their wonderful dams and other works, when living away from deep water; they make, in fact, arrangements to insure constant water-accommodation. The dams they construct across streams cause the formation of ponds deep enough to insure the entrances of their burrows and houses being under water, and hence are of the most vital importance. They are constructed in the form of banks, with a foundation of brushwood, intermixed with mud, and poles; so much of the earth is sometimes used as to in time conceal the timber portion, but this is not usually the case. The woodwork is interlaced, but there is no planting of stakes such as the old accounts represent, and the whole construction has a very rough appearance. In dams mostly made of sticks, the surplus water naturally percolates through, but in an earth-bank dam openings are made at the top to allow for its discharge.

In addition to the dams, Beavers make canals leading from their ponds into the woods where they cut their wood, and if the banks are steep, they cut "slides" or runways in them. The celebrated "lodges" or houses are piles of sticks, mixed with mud, on the banks, with a small chamber inside, containing beds of leaves and chips, and having two neatly finished entrances opening under water. They are careful to plaster their houses with fresh mud as late in the autumn as possible, so that this mud, freezing, makes the whole structure as hard as stone, and impervious to their great enemy, the Glutton. Besides the houses, they have burrows, which they use as a last refuge in case of urgent danger.

In summer Beavers lead an easy life, wandering about and feeding on herbage, berries, &c., as well as bark, but towards autumn they work hard at getting in their winter supply of wood. They gnaw through trees a foot in diameter, cut up the boughs into suitable-sized pieces, and sink these in piles in their ponds. Thus, when everything is frozen in winter, they can live at ease on their stores, eked out with

water-lily roots and such food obtainable below water. The gnawed boughs are used to strengthen the dam and pile on top of the lodges, so that nothing is wasted. The upkeep of the dam is attended to with great care; the Beavers frequently survey it, and each one does such work on it as seems to him necessary. In working with mud, they carry it in their paws under their chins, but do not use their tails as trowels, as used to be supposed. The dam seems to be usually formed by a pair only, but if the pond formed is a large one, several families will take up residence on it, and help in maintaining it; they do not, however, live and work in large colonies. The young, which are born in May, are in number from one to six, begin to eat solid food at about a month, but are not full-grown till over two years old, at which age they leave the lodge of their parents to start in life for themselves. When small they cry exactly like a human infant, and they leave the nest when only as big as Rats.

The Beaver seems to be a long-lived animal for its size, reaching about twenty years—at any rate in captivity; but it is said that in the wild state the teeth of very old Beavers get so blunted that they cannot cut wood for themselves, and are ultimately killed by their neighbours for stealing the cut wood of others to satisfy their hunger—a sad end for so harmless and industrious a creature. Fortunately the persecution of man is less severe than it was, owing to other furs having come into competition with Beaver, and to the use of silk in making hats, but protection will probably be necessary if this wonderful animal is to maintain its existence indefinitely. Beavers do well in captivity, but their nocturnal habits make them often rather unsatisfactory exhibits in menageries. They have been established in a state of more or less freedom in at least one English park, and have often bred in the London Zoological Gardens.

INDIAN STRIPED SQUIRRELS

By Louis A. Sargent

THE INDIAN STRIPED SQUIRREL

(*Sciurus palmarum*)

WHEREVER they occur, and they are found almost everywhere except in the Australian region, the Squirrels are the most conspicuous of small beasts, from their liveliness and diurnal habits, while their pretty appearance and amusing ways give them a popularity denied to most of their rodent relatives. The most familiar of all of them, where it occurs, is the little Striped Squirrel of India, which lives the life of a semi-domesticated animal about human habitations. It is considerably smaller than our Squirrel, and, as the illustration shows, very differently coloured, and without the pretty ear-tufts which give such a striking expression to the Red Squirrel. The colour varies somewhat locally, some races being redder and less grey than the ordinary type, and both black and white varieties have been recorded. Indeed, it would be a remarkable thing if such were not the case, for the Squirrels are remarkable not only for the brightness of their colours, but also for the great tendency to variation they exhibit.

Although this species is often called the Palm Squirrel, it has no particular preference for palms, running up any tree that is handy. It feeds to a great extent on the ground, and is, like so many rodents, omnivorous, though chiefly a vegetable-feeder; shoots, seeds, and so forth, form its usual food, though it also eats some insects, and is reputed to plunder birds' nests, although it lives on excellent terms with the birds. Any scraps of human food, such as bread, which it can find or steal in its ramblings about houses, it will appropriate gladly, and it is difficult to keep it out of rooms when it has found some such inducement for coming inside; as for using harsh measures to it, one is averse to such a course with such a pretty little animal, so that, on the whole, it leads a privileged life.

Its note is a shrill chatter, accompanied by a jerking up and

quivering of the tail, and heard to perfection when it has just escaped a Dog by running up a tree—with not an instant to spare, for it seems to enjoy the risk, and turns round at a safe distance to vituperate its enraged enemy.

It makes its nest in the branches of a tree or under a roof, and two to four young are produced in a litter; they are at first blind and helpless, as in most rodents. Many are reared by hand to be kept as pets—in Calcutta at any rate; but, for some reason or other, this species is quite scarce in the hands of English animal dealers, though they often have other foreign Squirrels, especially the beautiful Prevost's Squirrel (*Sciurus prevosti*) of the East Indies, which is brilliantly coloured with jet-black, bright chestnut, pure white, and iron-grey. There are many species of typical Squirrels, some as big as Cats, and others as small as Mice, but all presenting a strong family likeness. There is only room here to say a few words about our own species, which is, to my mind, about the prettiest of any.

THE COMMON SQUIRREL

(*Sciurus vulgaris*)

The Common Squirrel is common not only in our islands, but all across the Northern portion of the Old World, even to Japan. The red colour so characteristic of it with us is not constant through all its range, Siberian specimens being mostly grey; it is these, having finer fur than our Squirrels, which furnish the Squirrel-skins so largely used for ladies' attire. Even in Britain the Squirrel is much less red in winter than in summer, and in the latter season the ornamental tufts on the ears are absent.

The active habits of the Squirrel are well known, and also his unfortunate destructiveness in woods, owing to his habit of eating the shoots and bark of trees. He is also an enemy to birds, whose nests he pillages of both eggs and young. On the whole, however, except when very numerous, he does so little harm that his many engaging qualities justify his preservation. The home of the Squirrel is a "drey," or domed nest, somewhat like that of a Magpie, and usually built high up in the small branches of a tree. In one of these abodes the young are born, usually early in spring—two or three is the common number. When taken and hand-reared they make, as is well known, most charming pets, and can be allowed to go

about loose in a country place. In any case, if confined, they should not be put into the abominable wheel-cages so often used; a Squirrel needs a very large cage, at least two feet every way, with a sleeping-box. Squirrels do not hibernate in winter, though they may keep at home in their nests in bad weather; but in autumn they make some attempt to provide against winter emergencies by burying nuts and acorns in the ground; many of these are not consumed, and so Squirrels unconsciously aid in the extension of the trees which bear their food.

It ought to be mentioned that the American Grey Squirrel (*Sciurus cinereus*), which is larger than our animal and without ear-tufts, has been introduced into Bedfordshire, and seems quite established there. A few may also be seen in the Zoological Gardens and other parts of Regent's Park; the species is a very familiar one in American parks, where it has domesticated itself.

FLYING-SQUIRRELS

THERE is a group of Squirrels which, though agreeing in general habits with ordinary Squirrels, differ in possessing a parachute-like expansion of the skin along the sides, like that found on the Cobego, but not so well developed, there being little, or not any, of this before or behind the legs. The use of this structure is, of course, the same as in the Cobego, to enable the animal to take long sailing jumps from one tree to another. Flying-Squirrels differ from typical Squirrels in being nocturnal; the larger kinds (*Pteromys*), some of which are the biggest Squirrels known, are purely Asiatic, and these have the parachute-skin best developed. The smaller ones (*Sciuropterus*) are not only found in Asia, but there is one in Europe, and one in America (*Sciuropterus volucella*), a very beautiful little grey animal, not so big as a Rat, which is sometimes imported here as a pet, and has bred in captivity. This is rather remarkable, for, as a rule, Squirrels very seldom reproduce in that condition, though they are easy enough to keep.

GROUND-SQUIRRELS

ONE usually associates Squirrels with trees, but a considerable number of species live on the ground, these being the Ground-Squirrels (*Tamias*), of which the pretty little American Chipmunk, something like the Indian Striped Squirrel, but smaller, is an example, and the animals of the genus *Spermophilus*, exemplified by the Souslik of the Old World and the so-called Striped Gophers of the New. There are also Ground-Squirrels (*Xerus*) in Africa. These terrestrial Squirrels live in holes, and resemble Rats in their habits. Some of them, with fair-sized ears and

large bushy tails, resemble the ordinary Tree-Squirrels in their appearance so much, that it seems strange that they should live in such a different way; but from these there is a gradation to species with very small ears and short insignificant tails, and thus links are formed between the typical Squirrels and the group next to be noted.

THE MARMOTS

THE Marmots are heavy, stout-bodied rodents, with the ears always, and the tail generally, quite short; they are burrowers, and at first sight look very different from the light, agile, bushy-tailed Squirrels, though really belonging to the same family (*Sciuridæ*). They are found in the northern parts of both worlds, two of the most familiar being the Alpine Marmot (*Arctomys marmota*), which used to be taken about for exhibition as Monkeys are now, and the Woodchuck (*A. monax*) of North America, a familiar garden-pest in that country by its inroads on the vegetables. Both of these hibernate during the winter; they are about as large as Cats.

The well-known Prairie-Dog (*Cynomys ludovicianus*) is also a Marmot, but a much smaller animal, of the size of a Guinea-Pig, and sandy-coloured. It lives in communities or warrens—called "dog-towns"—in the open plains of North America, and the little Burrowing Owl (*Speotyto cunicularia*) lives in its company. Both bird and beast have lived together and bred in an enclosure in our Zoological Gardens, but though they did not hurt each other, their relations could not be called cordial.

THE SCALY-TAILED SQUIRRELS

IT is very doubtful if these animals are closely related to the true Squirrels, and in any case they belong to a separate family of rodents (*Anomaluridæ*). They are all West African, and present the very remarkable peculiarity of having a series of broad horny scales at the base of the under-surface of the tails, which are supposed to act as climbing-spurs, to hinder their slipping back when climbing. Most of the species belong to the genus *Anomalurus*, and have a parachute expansion of the skin of the sides, as in the Flying-Squirrels, but it is less wide than in those animals; and in one form (*Zenkerella*) it is absent.

MUSQUASH
By Louis A. Sargent

THE MUSQUASH

(*Fiber zibethicus*)

THE Rodents are far the most numerous order of beasts, comprising nearly a quarter of the known species, and among this host of gnawers more than a third belong to the family of Rats and Mice (*Muridæ*), so that this is the largest, and in some ways the most important, family of quadrupeds. They are not, however, animals of much distinction, so to speak, and few can boast of any name but "Rat" or "Mouse." The present animal, the Musk-Rat of North America, is one of the few exceptions, and is quite a notable creature in some ways. In size it is large for a Rat, measuring a foot in length without the tail, which member is naked, scaly looking, and flattened sideways—not vertically as in the Beaver, which in many ways the Musquash resembles.

The hind-feet are, however, not webbed fully like the Beaver's, but only at the bases of the toes. The fur is like that of the Beaver in character, consisting of a soft under-coat overlaid by long glistening hair, and, as in the Beaver, there are scent-pouches situated under the skin below the base of the tail, secreting the musky scent characteristic of this animal, as those of the Beaver do the "Castoreum."

The Musk-Rat is the common Water-Rat of North America generally, being an abundant animal, and widely distributed all over the Continent, from the "barren grounds" in the North to Mexico.

In general habits, as in appearance, it is very Beaver-like; living in small communities by the banks of streams and lakes, and making burrows with entrances under water, while for winter use it constructs domed houses or "lodges" made of grass, sedge, &c., mixed with mud, very like miniature Beaver-houses. The materials of these, being edible from the Musquash's point of view, also serve for a winter supply of food; the ordinary diet consists of both land- and water-plants, but, unlike the Beaver, the Musquash has a decided carnivorous tendency, and devours fish, molluscs, and other items of animal food. One peculiar point in its habits deserves notice; it is active during the winter, and when it has to swim for some distance under ice, it will expel the impure air from its lungs and re-inhale the air-bubble thus formed

after it has been purified by contact with the ice and water. Musk-Rats have a habit of slapping the water with their tails like Beavers, and this serves as a warning of danger; their ordinary voice is a squeak, or a whimpering note when swimming happily about. The young ones, which are, as in Mice and Rats generally, naked and blind at first, are born in the burrows, and two or more litters, of five to nine each, are produced yearly. Being so prolific, Musk-Rats do a good deal of harm by boring holes in embankments, especially in the south, where the Alligator, one of their worst enemies, has been so much killed down of late; but they are in great demand for the fur trade, their skin being much used, especially when dyed, for the article called "electric seal." I need hardly remind my readers that such a thing as an Electric Seal does not exist; indeed, the only electric creatures are not beasts at all, but a few species of fish, like the Electric Eel of South America, and the Torpedo of the Mediterranean. Musquashes are seldom seen in captivity, but the species was exhibited at the London Zoological Gardens some years ago.

THE LEMMING

(*Myodes lemmus*)

THIS quaint little creature, an inhabitant of the Scandinavian peninsula, has attained a great reputation on account of the tragic migrations it periodically performs. It is a very small animal, about twice the size of a common Mouse, stout and chubby in shape, with small eyes, ears, and tail, and thick fur—bright fawn above, with conspicuous patches of black on the head and shoulders, and white below. Altogether, it is not unlike a miniature Guinea-Pig. In the ordinary way, its life is uneventful enough; it is an Alpine animal, frequenting the high "fells" of the central mountain range, and feeding on the scanty vegetation of the heights. It is very hardy, not hibernating in winter, nor laying up a store of food, but burrowing under snow and turf to get at the means of subsistence. Lemmings are also about the most courageous beasts in existence—being more inclined to fight than fly when suddenly surprised, and sitting up on their haunches to defy man or Dog. Breeding twice a year, and having from three to eight in a litter, they multiply rapidly, and it is no doubt their great

increase of numbers which occasions their wonderful exodus from the high plateaus and descent into the cultivated lands, which may happen at either short or long intervals; as few as five, and as many as twenty years, may elapse between "Lemming years." When once started on their pilgrimage, nothing stops the brave little creatures; they climb hills, enter towns, and fearlessly cross rivers and even lakes, for they can swim for miles, though, of course, in a long water-passage many perish. Finding more to eat than they ever got at home, and not travelling continually, but often settling for a time, they breed more freely than before, but still move slowly on. All carnivorous creatures, furred and feathered, live luxuriously upon them, and disease makes havoc among the crowd, but still they slowly press onward, till at the end they reach the sea. Not knowing the extent of this new watery obstacle, the survivors boldly set out to swim across it, and with their death by exhaustion and drowning the expedition ends. One cannot help feeling touched at such a fate for the gallant little Vikings; but it comes as a relief to their human neighbours, for they are naturally almost as destructive as locusts in many places. Lemmings are not often to be met with in captivity, but I have seen a few both in the London Zoological Gardens and at Mr. Hamlyn's, and their habits would be well worth studying if they were kept as pets.

THE ARCTIC LEMMING

(*Cuniculus torquatus*)

ANOTHER species of Lemming (*Myodes obensis*), closely allied to the Scandinavian one, is found in Northern Siberia and North America, but the characteristic Arctic Lemming is a very distinct species, even more chubby in form than the ordinary kinds, with no external ears, and hardly any tail. Moreover, the feet are different, the first toe of the fore-paws being quite rudimentary, while the third and fourth bear very large and strong claws, which receive an extra growth of horny matter in winter. At this season also, the coat, which is much greyer in summer than that of ordinary Lemmings, turns pure white. This little creature is active under the snow in the winter, and inhabits even Novaia Zembla, as well as Greenland.

THE FIELD-VOLE

(*Arvicola agrestis*)

THE Musk-Rat and Lemmings form part of a well-defined group of the Mouse family known as Voles, containing numerous species of wide distribution, several of which are familiar in our own Islands—the present one far too much so. The Field-Vole is about the size of the House-Mouse, but, like Voles in general, has smaller eyes and much shorter ears and tail; in fact, it is often called the Short-tailed Field-Mouse. It is of a dull-brown colour, and far less lively and active than the House-Mouse. Its favourite haunts are rough grass-fields, and when it becomes numerous it does great harm by devouring stems and roots of grass, as in the well-known "Vole plague" in Scotland in 1892. Although widely distributed in Great Britain, and also all over Europe, this Vole is not found in Ireland. It is worth remembering that during the plague great service was done in the destruction of the vermin by Weasels, Rooks, Owls of several kinds, Kestrels, and Black-headed Gulls.

Field-Voles breed in burrows in the ground, and as they may have as many as six young in a litter, and up to four litters a year, their increase is naturally liable to become excessive if circumstances favour them.

THE WATER-VOLE

(*Arvicola amphibius*)

OUR familiar "Water-Rat" is our largest Vole, nearly equalling the ordinary Rat in size, but easily distinguishable by its blunt Vole-head and very short ears. Usually it is brown, but black specimens are common. Although not web-footed, it is a good swimmer and diver, and lives chiefly by the water-side, making its home in a burrow in the bank. Except when it attacks garden produce, such as potatoes, the Water-Rat is a harmless creature, living chiefly on marsh- and water-plants, and rarely touching animal food; while, from being constantly on the move in the day, it is easy to watch, and thus becomes a favourite. Although, like the Field-Vole, unknown in Ireland, it is found across Europe and Northern Asia generally.

HAMSTERS
By Louis A. Sargent

THE HAMSTER

(*Cricetus frumentarius*)

FORTUNATELY for us, the Hamster is not included among British animals, although it is well known as near us as Germany, and ranges thence eastwards into Central Siberia. It is about the size of a Guinea-Pig, and not unlike one in form, except that it has a short tail, and also a smaller head and smarter appearance. The tortoise-shell colouration of the coat is somewhat variable, and pied specimens, or even pure black and white ones, are not uncommon. One notable peculiarity of the Hamster is the pair of cheek-pouches it possesses, which can be distended until the size of the head appears doubled. It blows its cheeks out like this when angry, which is pretty often, for the Hamster is one of the most touchy, ill-conditioned little animals in existence; but their more practical purpose is to serve, as in the case of other animals possessing these convenient face-pockets, as temporary receptacles for food.

When he has his mouth filled with provisions, he cannot bite; but he is not long in emptying his pouches and getting ready for the fray if he is not taken quite by surprise. He is really courageous as well as quarrelsome—will make a good fight with any Dog but an experienced ratter, and even attack a man without any provocation than that of passing near his hole. His relations with his fellow Hamsters are usually strained; even the male and female only agree during their short honeymoon in the spring, when they are quite strongly attached for the time being. But the feeling soon wanes, and when the young ones arrive, their mother turns them out-of-doors to seek their own living when they are a fortnight old. This is no hardship, for they have already begun to dig at that age; and, though born blind and naked, they have teeth from the first, and begin to eat corn at a week old, before they can see or have a full coat of fur, so that they can fairly be called a precocious litter. Their number is six to eight; and at least two litters appear in a year.

The first burrows of the young pioneer Hamsters are not so deep and extensive as those of the older ones, the abode of the old male being the best of all. In this one finds a long vertical entrance shaft, sometimes more than two yards deep, from which a passage leads to a living-room, well lined with fine straw and other soft materials. Two run-ways lead out of this, a winding exit to the open air above, and a short passage to the store-room or rooms, for a wealthy old curmudgeon of a Hamster will have several, all, in the autumn, well stuffed with grain. The female's nesting-burrow has several entrances to the nest-chamber, and seldom has any store-rooms, for she does not hoard up any food while nursing; when she is relieved of the care of her last litter, too, she has not as much time for her winter arrangements as the male has had, and hence they are not quite so perfect. In spite of the care it takes to avoid hunger in the winter, the Hamster has little need of food at that season, for it is a typical hibernating animal, and, blocking up the entrance of its burrow, sleeps as soundly as a Dormouse.

In its ordinary diet the Hamster is as omnivorous as the Common Rat; herbs, roots, and fruit, all contribute to its *menu* as well as the grain and seed it so carefully stores up, while it never spares birds, Mice, insects, or any small creatures that come into its power. And, as in spite of its heavy form, it springs nimbly enough, and climbs well, it is a formidable adversary. With such habits as it possesses, it is easy to see that the Hamster is a most noxious and destructive animal, and in some parts of Germany a reward is paid for its destruction, and there is, or was, a regular class of Hamster-catchers. Besides the reward, these find some profit in the little miser's hoards of grain, while the fur and even the flesh are utilised. From the account given, the Hamster does not seem an inviting animal as a pet, but hand-reared specimens are amiable enough, and some are occasionally imported here. The Hamster group of the Mouse family contains several more species in the Old World, of the same sturdy build as the common Hamster, but smaller, and a great many in America, including the ordinary wild or country Mice of that country, but many of these are shaped like ordinary Rats and Mice, not like typical Hamsters.

THE HOUSE-MOUSE

(*Mus musculus*)

The typical Rats and Mice, relatives of our familiar pests, are a very large group, numbering over a hundred species, but, in nature, confined to the Old World, some being even found in Australia. Our House-Mouse is the most widely distributed of all, thanks to our involuntary assistance, being found practically everywhere, but usually about houses. It certainly did not inhabit the New World before Europeans got there, and no one knows the precise locality it originally inhabited in the Old; but it was probably near the seats of ancient civilisation, as it was so universally known in antiquity. The colour of the little animal is so well known as to be taken as a descriptive term; especially to be noted is the fact that it is grey underneath, not white. There is no need to say anything about its habits, for to most people it is more familiar than they could wish. It may be noted, however, that one peculiarity is its great activity, and another its characteristic and unpleasant smell, the chief drawback to the prettily-coloured "fancy" Mice, its descendants, as pets.

THE WOOD-MOUSE OR LONG-TAILED FIELD-MOUSE

(*Mus sylvaticus*)

This handsome Mouse ranges widely across the northern parts of the Old World, and is widely spread and abundant with us, occurring even in the London parks; but it is essentially a country Mouse, and seldom enters buildings except sometimes in winter. It is decidedly larger than the House-Mouse, and more prettily coloured, being brown above and white below and on the hind-feet. Although destructive in gardens and fields, and an enemy to small birds, it is a charming little creature, and makes a nice pet.

THE HARVEST-MOUSE

(*Mus minutus*)

The tiny Harvest-Mouse is much smaller than the Common Mouse, not being more than three inches long; it is handsomely coloured, being red-brown above and white below. It does very little harm, and, as it is fond of insects, is probably of considerable use. The beautiful nest it makes for its young has long attracted attention; it is built on a tall weed or among stalks of corn, fashioned

of split grass blades, and round in shape. This little Mouse is a famous climber, and its tail is to a considerable extent prehensile; a cornfield is its forest, where it disports itself like a miniature Monkey. Although not an abundant species, it is found all across the northern parts of the Old World.

THE HOUSE-RAT

(*Mus rattus*)

I THINK it desirable to avoid the name "Black Rat" or "Old English Rat" for this species; for it is believed to be a ship-borne immigrant into Britain, although a far older one than the Grey or Sewer-Rat, and in India, where it is undoubtedly a native, it is usually brown. It is a smaller animal than the Sewer-Rat, with a more delicate form, larger ears, and longer tail; and in habits it is less fierce and carnivorous, and much more of a climber, affecting the upper parts of houses, and in some cases, as in the Laccadive Islands, living in trees. This is one of the Rats which has been mainly instrumental in propagating the terrible "Plague," which is a Rat-disease, and conveyed to man by the agency of the Rat-fleas, which often bite human beings. Naturally, a Rat which is found about rooms is particularly apt to communicate the disease to man, so that the almost complete extirpation of this Rat in Britain by the other common species, more objectionable in itself as this is, has been a great benefit.

THE SEWER-RAT

(*Mus decumanus*)

THIS is the ordinary Rat found in our country nowadays, and widely distributed over the world wherever ships and wheeled vehicles give it an opportunity to travel as a stowaway. Although its natural colour is greyish-brown, it is often black, so that, judging by colour, it is easily confused with the true *rattus*. It is much more of a burrowing and aquatic animal than that species, and takes to a water-side life quite readily, being a faster swimmer than the Water-Vole, if not, perhaps, so enduring. Its original home appears to be Western China; at any rate we know it was an immigrant from the East, and its progress is pretty well known; hordes of these Rats swam the Volga in 1727, on their westward journey, and a few years afterwards they first appeared in England. It is a most destructive and dangerous creature, not only damaging human property by its gnawing and burrowing, by eating corn and other provisions, and killing young game and poultry, but occasionally attacking children and even adults, who have been killed by swarms of these vermin. Yet it appears to be the ancestor of the tame Rats so often kept as pets, and its intelligence and courage compel admiration, although its extermination, like that of its rival, would be a benefit to the world at large.

SPRINGHAAS
By Louis A. Sargent

THE SPRING-HAAS

(*Pedetes caffer*)

THERE are many rodents which are specially adapted for jumping on their hind-legs like Kangaroos, but the present animal is very much larger than any of the rest, about equalling the Common Hare in size; in fact, its name, in Dutch, means the Jumping Hare. The real affinities of the animal are, of course, with the rodents, among which it stands rather alone, so as to form a family by itself (*Pedetidæ*), though formerly classed with the Jerboas.

The toes are five on the fore-foot, provided with strong curved claws: on the hind-foot there are only four, the first being absent; the third is the strongest, and they are armed with stout straight nails almost like pointed hoofs.

This is a well-known animal in South Africa, and it extends north to Angola and to East Africa; it affects high and dry country, whether level or hilly, and during the day conceals itself in burrows, which it digs; these are complicated in form, and serve as an abode for more than one family of the animals.

In the night the Spring-Haas is abroad in search of food, which is vegetable, consisting of herbage and roots: its movements, as might be expected from its shape, are in bounds like those of Kangaroos, sometimes for a distance of several yards, but, according to some, it is not so enduring as these marsupials, and is easily hunted down. There are two motives for persecuting it; it is very destructive to crops in all stages, and in the second place, it is very good eating, and hence in demand for food. When captured, it makes some resistance by scratching with its powerful hind claws, but it is not a savage animal, and becomes gentle in captivity. It is said to breed in summer, and to have three or four young ones, which remain for some time in the burrow. Moisture is very objectionable to the Spring-Haas; it sleeps a great deal in rainy weather, without becoming actually torpid, and a favourite method of capturing the animal is to pour water into its burrow. Some years ago a specimen lived in the London Zoological Gardens for some time; but this was the only one the Society had ever received.

THE JERBOAS

THE true Jerboas (*Dipodidæ*) are even more specialised for jumping than the Spring-Haas. They are small animals, about the size of Rats, with very big heads, round plump bodies, and long thin tails, tufted only at the tip. Their fore-feet are exceedingly small, and held up close under the chin as a rule, so as not to be noticeable. The hind limbs have the instep portion, between hock and toes, very long and thin, and as the animals walk on the centre three toes only—the first and fifth being very short or absent altogether—they have a curiously bird-like look. Although, when going fast, they progress by successive very rapid and extensive bounds, in the ordinary way they toddle about on their spindly legs with alternate steps, which gives them a very quaint appearance.

They are essentially desert-animals, with soft fur of a sandy colour, matching the soil of their home, and they live by day in burrows, often in communities, coming out at night to feed on seeds, herbage, and, in the case of some of the larger species, on the eggs or young of the desert birds. Their range is from Eastern Europe to Northern Africa and Central Asia, and there are a good many species. One of these, the Egyptian Jerboa (*Dipus ægyptius*) is frequently imported into England, and, being a very clean and gentle little animal, makes an ideal pet. The great point in keeping it is to give it a good run, and plenty of dry sand to scratch and roll in.

THE GOPHERS

THE Gophers (*Geomyidæ*) are an American family of rodents, living on the ground and usually burrowing. They are provided with cheek-pouches, lined with hair and opening outside the mouth, and some of them, like the Pocket-Gopher (*Geomys bursarius*) of the Mississippi plains, are well-known animals. The Pocket-Gopher is like a short-tailed heavily-built Rat, with soft brown fur and enormous teeth and front claws. It is a great burrower, and lays up stores of seeds and roots, especially potatoes when it can get them.

THE KANGAROO-RATS

CLOSELY allied to the Gophers, and having the same external cheek-pouches, is a family of little American desert rodents (*Heteromyidæ*), of which some species are remarkably like the Jerboas of the Old World, in general shape, colour, and jumping habits; the resemblance extends even to the peculiar tufted tail, but the hind-legs are not so long, or their toes so much reduced, as in the true Jerboas.

THE MOLE-RATS

Two families of rodents, the *Spalacidæ* and the *Bathyergidæ*, are very like Moles in form and habits, especially the latter one. They have small or rudimentary eyes and ears, and sausage-shaped bodies like Moles, but the characteristic rodent incisors are particularly well developed, and they feed on vegetable food, chiefly roots, for which they explore the earth and drive tunnels, as the true Moles do after worms and grubs. One of the *Spalacidæ*, the Blind Mole-Rat (*Spalax typhlus*) is found in Eastern Europe, Western Asia, and North Africa. It has no visible ears or eyes—the latter being indeed covered with skin—and a curious broad flat head; in spite of its blindness, however, it is a far-seeing animal in one sense of the word, for it lays up a store of bulbs in a chamber in its burrow. The Bamboo-Rats (*Rhizomys*) of Eastern Asia and Africa belong to this family, but are less completely mole-like than most of these burrowing Rats, having small external ears and visible eyes.

The *Bathyergidæ* are confined to Africa, and the best-known is the Coast-Rat or Sand-Mole (*Bathyergus maritimus*) of the Cape, which burrows on the sea-shore. It is almost blind, and rather a large animal, being nearly a foot long; in fact, most of these "rodent Moles" are bigger than our Mole. In Somaliland there are some extraordinary little creatures (*Georychus*) belonging to this family; they have small eyes and no ears, but their tail is fairly long. The remarkable thing about them, however, is that instead of the thick soft fur of most burrowers, they have practically no hair at all, and are nearly naked.

THE DORMICE

THE family of Dormice (*Myoxidæ*), which in appearance and habits are intermediate between Mice and Squirrels, though more nearly allied to the former, is familiar to us by our own pretty little species (*Muscardinus avellanarius*), a beautiful little chestnut animal with a hairy tail, and rather larger than a House-Mouse. It is a harmless little thing, living in woods and hedges, and feeding on nuts, seeds, and wild fruit. It prudently lays up a winter store, but, as everybody knows, spends most of the winter—indeed, half the year—in sleep, for it is the best-known of our hibernating animals, and its sleepiness is proverbial. Besides the Common Dormouse, there are on the Continent two large species, nearly as big as Rats, and grey in colour instead of red. The Garden Dormouse (*Myoxus quercinus*) is a very pretty animal, with black patches round the eyes, and the tail grey at the root, black in the centre, and white at the tip. The Fat Dormouse (*M. glis*), esteemed such a delicacy by the Romans, is bigger, with a tail nearly as bushy as a Squirrel's. The rest of the Dormice are African.

THE COYPU

(*Myopotamus Coypus*)

THE Coypu is the only generally well-known member of the family *Octodontidæ*, which are African and American only. Most of them are ground or tree animals, but the Coypu is a gigantic Water-Rat, bigger than a Cat, with webbed hind-feet. It is a common animal in South America, and well known over here in two capacities—it produces the so-called "nutria" fur, having a soft under-coat like so many aquatic animals, and it is exhibited by travelling showmen as a huge and terrible Sewer-Rat! Thus it usually appears under a false name—the word "nutria" being Spanish for Otter. In Zoological Gardens it does well, and frequently breeds; the young are born active and well-furred, with open eyes. They are fond of riding on the back of their mother in the water, and it might at first be supposed that the peculiar position of the nipples in this animal—along the sides instead of on the under part of the body—was specially adapted to suckling them in this position; but as a matter of fact this curious location of the teats is found in the land Octodonts also.

COMMON PORCUPINE

By Louis A. Sargent

THE COMMON PORCUPINE

(*Hystrix cristata*)

It is not surprising that this Porcupine has always been one of the best-known of rodents, for it inhabits an anciently civilised portion of the world—the countries bordering the Mediterranean, both European and African—and its curious defensive armature of spines is calculated to impress any observer in a very literal sense. It is one of the giants of the rodent order, measuring about two feet six inches in length, and being heavily built. The characteristic "quills" are confined to the hinder-part of the body, the fore-part being covered with ordinary hair, with a crest of long stiff bristles; but the quills themselves are simply exaggerated hairs, and all gradations of thickness may be found on the animal. The long quills of the body are ringed with black and white; the short ones growing on the tail are themselves short, white throughout, and open at their tips; when shaken they produce a rattling sound, which is supposed to be a warning to the Porcupine's enemies. For, though a slow-moving creature, and not gifted, as old legends asserted, with the power of darting its quills like arrows, the animal is not to be attacked with impunity. When it tucks in its head and bristles up its quills, no one can do anything with it, and it may even assume the offensive and charge backwards on the foe. In any case, some of the quills are certain to be loose, and to fly out in these warlike manœuvres; this fact furnishing the foundation for the story of the Porcupine's exploits in archery. The puncture of one of the quills is a serious matter, if it be not extracted immediately, as it works more deeply into the flesh; for this reason, carnivorous animals often pay with their lives for a rash attack on a Porcupine, the spines becoming fixed in their mouths and throats. Nevertheless, they seem to be unable to resist the temptation, no doubt hoping to catch the animal unawares; the Leopard, at all events, is said to be in the habit of killing the Porcupine by a blow on its undefended

head. When fighting each other, Porcupines make use of their curious retrograde charge, and if one finds himself pierced by a quill from the enemy, he is careful to extract it as soon as possible. They are unsocial animals, living in burrows excavated by themselves, and are seldom seen abroad in the day; their food is purely vegetable, and consists of roots, herbs, and fruit, which is sometimes pilfered from gardens. Their note is a grunt, and from this, and the bristly nature of their coat, no doubt, comes their popular association with Pigs, a group with which they have no relationship at all, as an examination of their typically rodent teeth, to say nothing of their paws, at once makes clear.

Young Porcupines are more advanced at birth than most young rodents, having their eyes open, and possessing a coat of spines, which are, however, short and flexible and lie close to the skin. They grow, however, very rapidly. Two or four young ones form the litter, and they are born in spring. The flesh of the Porcupine is very good, and is said often to appear on the dinner-table at Rome, the Campagna being a well-known haunt of the animal; while everyone is familiar with the use of the quills as penholders and toothpicks. In captivity Porcupines live well, and become tame; they also breed freely, and will stand the English winter in an ordinary sty. All fittings, however, must be made of brick and iron-rods, or the animals will soon make their escape by gnawing.

The Common Porcupine is replaced in South Africa and India respectively by two very similar species, both large, and with crests of long hair (*Hystrix africæ-australis* and *H. leucura*); there are also in Eastern Asia two or three more species, not so large or well-crested; but the habits of all seem to be very much alike.

THE BRUSH-TAILED PORCUPINES

THESE are very different-looking animals from the ordinary large Porcupines, being much more like big Rats; they have spines, but these are comparatively short, and do not do much to break the

outline of the body, while the tail is long and very Rat-like, but terminated by a tuft of flattened and twisted bristles. There are two species, one African (*Atherura africana*) and one East Indian (*A. macrura*), the latter being the larger of the two.

THE CANADIAN PORCUPINE

(*Erethizon dorsatus*)

It is a curious fact that, while the Old World Porcupines are all burrowing ground-animals, those of the New World should all be climbers, though the present species is less of a tree-animal than the others. It is also the only northern one, ranging from Alaska and Canada to Virginia and Mexico, though it seems best known in the northern parts of its range. Although much the largest of the American Porcupines, it is considerably smaller than the big Porcupines of the Old World, being about two feet long. It is heavily built, with long powerful claws, and a tail which, though short, has some power of grip, and so aids in climbing. The spines are short, and much hidden in the long sooty-brown hair with which they are plentifully intermixed; they are as sharp and serviceable for weapons on the tail as elsewhere, and, in fact, the sudden sharp blows of that member which the animal gives are a very efficient mode of defence, in addition to the protective value of the spines generally. As they come out freely, the spines are liable to be unwillingly taken away from the conflict by the adversary, with the same result as noted in the case of the Old World Porcupine. The animal which seems to be most successful in its attacks is the Pekan or Fisher Marten (*Mustela pennanti*), which craftily burrows under the snow and attacks the creature's under-parts, these not being defended by spines in any Porcupines. But, as a rule, this Porcupine seems to be fairly safe; it is certainly a very slow mover on the ground, and not an active animal in the trees, whence it gets its chief food, devouring both the bark and the leaves. Indeed, when a Porcupine has finished

with a tree, this is not of much use to any one coming after. In spite of the damage thus done to forests, however,—for the Porcupine is active and feeds all through the terrible northern winter—it is protected by law in some districts, as being the only creature suitable for food that a lost traveller in extremities could capture without a gun; in fact, a species of emergency-game. Away from its native country, the Canadian Porcupine is very little known, but a fair number have been brought to England of late years.

THE COUENDOU

(*Synetheres prehensilis*)

This Brazilian animal may be taken as a type of the prehensile-tailed Porcupines of the hot parts of America. It is about the size of a Cat, with a curious snub nose and a long prehensile tail, and the feet very well adapted for grasping boughs, there being a fleshy pad opposite the toes on the hinder pair. The spines are very different from those of other Porcupines, being short all over the body, and uniformly distributed over head, back, and sides, intermixed with a coat of short fur.

The Couendou is a sluggish, harmless creature, spending most of its time in the trees on whose leaves and bark it feeds, and sleeping in the forks of the branches. This species has often been exhibited in the London Zoological Gardens, as have other species, for the group includes several kinds. Some of these have the fur so long that the short spines are concealed, such as the Mexican Tree-Porcupine (*S. novæ hispaniæ*) which approaches the southern territory of the big northern animal last mentioned.

VIZCACHAS AND PRAIRIE OWL

By Winifred Austen

THE VIZCACHA

(*Lagostomus trichodactylus*)

THE Vizcacha is one of the most characteristic animals of the Pampas region of South America, where its habits have been closely studied by many observers, especially by Mr. W. H. Hudson in Argentina. It is about the size of a Hare, the male being considerably larger than the female, which is also lighter in colour; the young closely resemble the adults in miniature. The tail is bushy, and the feet have four toes on the front paws, but only three on the hind. In its movements the Vizcacha is clumsy; when going about slowly it rests its hind-limbs on the hocks in an awkward-looking way, and its speed is so small that no Dog can fail to overtake it. Thus it relies for defence on its power of burrowing, and on the social habits which make the "Vizcachera" a little self-supporting community, somewhat like that of the Beavers in the North.

A Vizcacha colony is usually started by some old male, who digs out his subterranean dwelling in some favourable spot; ultimately he is joined by others, and a warren is formed. The earth thrown up out of the burrows, which are very wide at the mouth, makes a mound, securing the inmates against the danger of floods, and their continual cropping of the herbage creates a smooth close turf for some distance round their homes, on which they can play and feed in security, being able to see an enemy from some distance, and so escape in time.

Vizcachas are nocturnal animals, and it is not till nightfall that they come forth, at first sitting on their haunches at the entrance of their holes, the lady members of the party conspicuous by their alert and lively behaviour. They have a considerable variety of notes, and the squeaks, squeals, grunts, and groans that they are able to produce have quite the effect of an animated conversation. Like rodents generally, they have a passion for exercising their teeth, and are particularly fond of gnawing

down the giant thistles of the pampas in order to feed on the seeds; the dead stalks, and any bones or other rubbish they may come across, are dragged on to the mound, and help to elevate it. They are not very prolific animals, only breeding once a year, and then bringing forth only two or three young ones. Yet they manage to hold their own in spite of several dangerous enemies, especially the Puma, which hunts them untiringly, and appears to be their worst foe. Another is the common Pampas Fox (*Canis azaræ*), a grey animal, rather a small Wolf than a Fox, which, having by force possessed himself of one of the burrows in the village, is all too apt to depopulate it by devouring the young Vizcachas sooner or later, though the old ones appear to be a match for him, and even regard his presence in their midst with indifference, until he embarks upon his evil courses.

Like so many of their order, too, they come into conflict with man by their destructiveness to vegetation, to say nothing of the danger to riders caused by their burrows, and are hence hunted to extermination by their human neighbours. The most effectual method of getting rid of them appears to be the shockingly cruel one of earthing up their burrows and leaving them to die of hunger. Men make a special business of this, for the doomed colony must be watched for days lest its inhabitants should dig themselves out, or be rescued by their neighbours. For, to their credit be it said, animals from neighbouring Vizcacheras will come at night and try to release their friends; indeed, in time of peace, if I may use the expression, there is a good deal of friendly intercourse between neighbouring colonies, visits being paid and returned. The Vizcacha, however, considers his house to be his castle, and will not carry hospitality so far as to ask a friend inside; indeed, it takes very severe pressure of peril to induce a hunted Vizcacha to trust himself inside a neighbour's front door.

The Vizcachas have other friends, or at least harmless associates, besides each other. The best known of these is the little long-legged Burrowing Owl (*Speotyto cunicularia*), shown in the picture, which shares the burrows of the Vizcacha in South America, as it does those

of the Prairie Marmot (*Cynomys ludovicianus*) in the prairies of the north of that continent.

Two other hole-building birds also are commonly found about Vizcacheras, making their little burrows in the sides of the entrances of those of the Vizcachas, the Minera (*Geositta cunicularia*), a bird resembling our Wheatear in appearance and habits, and a Swallow (*Atticora melanoleuca*), very similar to our House-Martin, except that it has no white patch on the back. Certain insects also affect the Vizcachas' mounds especially, so that the Vizcachera is quite a little world in itself.

The flesh of the Vizcacha is edible, though apparently but little used; but the fur appears to have no special value. It does well in confinement, and is generally to be seen in our Zoological Gardens, where young have been produced on several occasions.

THE CHINCHILLA

(*Chinchilla lanigera*)

THE family to which the Vizcacha belongs (*Chinchillidæ*) is not a numerous one, but includes another animal, which, though of no such remarkable interest in its habits, is particularly well known by reason of the value justly set upon its extremely beautiful fur. The Chinchilla resembles the Vizcacha in general form, but has five toes on the fore- and four on the hind-feet, and is very much smaller, being considerably less in size than a wild Rabbit; it is also a very much prettier animal, with a smaller and neater head and large rounded naked ears. The coat of the living animal is just like the exquisitely soft, marbled silver-grey fur so familiar in ladies' costumes, for, unlike so many other furs, it needs to undergo no preparation in the way of plucking or dyeing. The tail, however, is curiously out of keeping with the rest of the skin, being covered with long coarse wiry hair. The claws are small and insignificant.

Chinchillas are Alpine animals, found in the Andes of Chili and

Bolivia, where they live in barren stony places, running up and down high rocks, however steep, with the greatest agility. They are social, and live in burrows, to which they retire on the slightest alarm, so that the hunters are obliged to avail themselves of the services of tame Peruvian Weasels to dislodge them, much as we do with Ferrets in the case of Rabbits; the South American Weasel, however, appears to be sufficiently accommodating to retrieve the Chinchilla it has killed. Living in a wild state on herbage, roots, and moss, the Chinchilla is easy to keep in captivity, and makes a charming little pet, though not remarkable for intelligence. It has often bred in the London Zoological Gardens; the young appear to be few in number, and to be born in a precocious condition, like young Hares rather than Rabbits. So useful and charming a little animal ought certainly to be domesticated, if only as a fur-producer, as it gives no more trouble to keep than a Rabbit. In Peru there is a slightly different species of Chinchilla, the Short-tailed (*C. brevicaudata*).

THE LONG-TAILED CHINCHILLA

(*Lagidium cuvieri*)

With a general resemblance to the Common Chinchilla, this species differs by its smaller ears and long well-clad tail, as well as by having only four toes on the fore-feet. It is also a much larger animal, being as big as a good-sized Rabbit, and its fur, which cannot be compared in quality with that of the true Chinchilla, is not of so pure a grey. It inhabits the same districts as that animal, and has much the same habits; it is rarely seen in captivity.

CAPYBARAS
By Louis A. Sargent

THE CAPYBARA

(*Hydrochærus capybara*)

THE Capybara may be called a gigantic water Guinea-Pig, for it belongs to the same family of the rodents (*Caviidæ*) as our familiar pet, and bears a general resemblance to it in form. Like the Guinea-Pig, it has four toes on the fore-feet, and three on the hind, and is without a tail; but it stands decidedly high on its legs for a rodent, and its feet are rather peculiar. They are all webbed, and have nails so broad and blunt that they practically amount to hoofs. The Capybara is much the largest of the rodents, being about four feet long—in fact, as big as a moderate-sized Pig. Its coat shows no difference according to age, sex, or season, and is coarse and scanty, not completely concealing the skin in places.

The home of the Capybara, which is also known as Carpincho and Cabiai, is South America, from Brazil to Northern Argentina; it is essentially a water-side animal, taking refuge whenever disturbed in the water, where it swims and dives with grace and ease. Although feeding to a considerable extent on water plants, however, it grazes on land a good deal, and is found ashore quite as much as afloat. On land it walks easily, and when frightened rushes off with a heavy gallop, emitting a hoarse bark at the same time. When resting, it often sits upon its haunches like a Dog, but, like the Cavy family generally, does not use its fore-feet to lift its food. Capybaras are sociable animals, always found in herds. They are prolific, considering their size, since from five to eight young ones are born annually.

Their worst natural enemy is the Jaguar, whose principal prey they are in many places; some also fall victims to Alligators, and they are also persecuted by man in places, as their flesh, though no great delicacy, is edible. The skin is of little value. When not molested, they become remarkably tame, and can be approached within a few yards; it is said that Horses are very much afraid of them, possibly on account of the headlong rush for the water the uncouth creatures make when disturbed. In its own country the Capybara is a byword for ugliness and laziness, though it seems hard that so harmless a creature should be maligned. In

captivity it is well known, and thrives admirably, frequently producing young; and, although coming from so warm a climate, will bear the English winter well out-of-doors, and take to water in any weather.

THE PATAGONIAN CAVY

(*Dolichotis patachonica*)

THE Patagonian Cavy, or Mara, is a large animal for one of its family, though not to be compared with the Capybara for size; still, it is a good deal larger than the common Hare. It is high on the legs, with small feet; the ears are rather large, and the tail a mere tubercle. The coat is thick, except upon the slender legs, and of a grizzly brown colour, the short close fur on the limbs being light chestnut.

The Mara is a characteristic animal of the dry open lands of Patagonia and La Plata, where it takes the place of such animals as the Hare, and is seen abroad by day. Usually two or three are seen together; although they sit up like Hares at times, they walk along in the ordinary way, not hopping. They are swift runners, and also adepts at burrowing, a combination not often found; but they are said to be willing to save themselves the trouble of making their own burrows by using those of the Vizcacha, wherever possible.

Maras have two young at a birth; they do well in captivity, and breed in that condition, being established in one or two English parks. There is another species of Mara (*Dolichotis salinicola*) which frequents saline plains, and in size and colour bears much the same relation to the Patagonian kind that the Rabbit does to the Hare, being much smaller and of a dull grey colour.

THE GUINEA-PIG

(*Cavia porcellus*)

THE Guinea-Pig is a typical example of the ordinary Cavies, which are all small, timid, insignificant little creatures, tailless and short-legged, living among rocks or herbage. All of them are South American, as indeed are all the present family. The Common Guinea-Pig was found already in a domesticated state, used as an article of food, and

showing much variation of colour, when the Spaniards invaded South America; the natural wild colour is the uniform grizzly brown, called "Agouti" by our fanciers. There is no need to say very much about this well-known little animal, which always attracts attention by its greediness and noisy squeaking, almost as much as by its variegated colours; but it is worth while to mention its remarkable precocity. Young Guinea-Pigs are not only born fully furred and with their eyes open, but also soon begin to run, and are provided with teeth; they will sometimes start eating solid food on the very day of their birth. As they really are good eating—as good as Rabbits in any case—and are even easier to keep than those animals, it is a pity they are not more utilised for table purposes. When cooked, they should be scalded, scraped, and fried.

THE AGOUTIS

The Agoutis (*Dasyprocta*) are a group of rodents belonging to a family (*Dasyproctidæ*) closely allied to the Cavies, and, like them, especially South American, but also found in the West Indies.

They are about as big as small Hares, with Rat-like heads and rather long legs, so that they walk and run freely. The tail is very short and hardly noticeable, except in the Acouchy (*D. acouchy*), but even in this species it is small and insignificant. Agoutis have a close hard coat of grizzled yellow and black, producing a brown effect; they are forest animals, living in small parties on the ground, where they feed on fallen fruit and nuts, roots, &c., sitting up and holding their food in their fore-paws, like most rodents. In captivity they do very well, and sometimes display an instinct for hiding superfluous food. Their flesh is eaten and appreciated in their own country, where they are accordingly much valued as game animals.

THE PACA

(*Coelogenys paca*)

The Paca, or Labba, belongs to the same family as the Agoutis, but in form resembles a Guinea-Pig, being heavy and thick-set; it is a good-sized animal, being about two feet long. Its cheeks are peculiarly

swollen, the bony cheek-arches of the skull being hollowed out into great capsules, communicating by holes with the interior of the mouth; the use of this curious structure is quite unknown. The toes are five on each foot. The coat of the Paca is short and coarse, of a dark sooty brown, marked with lines of white spots, very unlike that of the Agoutis.

In general habits, however, it is much like these animals, but is a burrower, and also takes freely to the water, diving as well as swimming, while the Agoutis only do the latter. The Paca is more esteemed as game than those animals, being much fatter and more like pork in the quality of its flesh. It has a wide natural range, from Guatemala to Paraguay, and is not uncommon in captivity, though a surly and rather uninteresting beast.

THE TAILED PACA

(*Dinomys branicki*)

THE present animal, though allied to the Cavies and Agoutis, is sufficiently distinct from them to be given a family of its own. Externally, it is much like the Paca, but has only four toes and a well-developed and conspicuous hairy tail, several inches long.

The history of the creature is most curious. In 1873 a Peruvian one morning found a specimen of this animal, till then unknown, walking about his courtyard. He killed it, and the specimen was duly recorded and named scientifically. Nothing more was heard of the animal till 1904, when Dr. Emil Goeldi, of the Museum of Para, received two live specimens, a female and young, which he was able to study in the Zoological Garden of that institution. They proved to be harmless, lazy, good-tempered creatures, and had the habit of sitting up and holding their food in their fore-paws, when eating, as the Agoutis do, but not the Paca.

END OF VOL. I.

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